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UNIVERSITY IDEALS AND THE FUTURE OF MEDICINE *

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LONDON, ENGLAND

It is a great privilege for all your guests to be allowed to join with you today in this celebration, and to congratulate you upon the achievement of such notable enterprises within your university and medical school.

Today you praise famous men and the fathers that begat you. Today you give thanks for the generosity of all those later benefactors who have enabled you to approach more closely to your ideals. Today you look back with thankfulness on the road you have traversed so far, and you look forward into the puzzling uncertainties of the future, but with high hopes and well grounded confidence.

You have most generously invited two Englishmen to be honored as your guests here today. I doubt whether you can possibly guess in full the thoughts and emotions that must crowd our minds and hearts as we remember your history and as we now join with you in this commemoration of the past, and this dedication to the needs of he future.

Matthew Arnold said that the University of Pennsylvania should be called "the University of Franklin." It was Benjamin Franklin who truly sowed the acorn that has grown into this great tree—this great university—and it was he who carefully attended to the grafting within it of the school of medicine. He saw to it, moreover, that the hospital which he himself had founded was brought within the sphere of the university as it grew. Because of him, you can rightly claim that your medical school was the first British school of medicine planted beyond the seas; and we, on our part, can hail it as the first school of medicine in America.

I hope it will not be thought out of place for me to speak of Franklin here as one of the greatest British subjects that ever lived. It was because of those ideals of liberty and justice and truth that were inborn in him that he became one of the first and one of the greatest of all American subjects, and we Englishmen have the right to share your pride of possession. May I confess that I, perhaps as you do, like to put Benjamin Franklin in that select list of characters whom I should greatly wish, if I could, to meet in the flesh? How we should enjoy his wisdom and goodness, his keen interest in every created thing, his ripe knowledge of men, women and affairs, his perfect manners, and his dry but refreshing and kindly humor.

You think of him today, and you think also of the long succession of leaders and benefactors who have followed him. John Morgan and William Shippen, Benjamin Rush, Caspar Wistar, Robert Hare, Joseph Leidy and William Pepper—William Pepper here is not a name of an individual but of a whole dynasty; these men give your medical school a noble lineage indeed.

As you think gratefully of the lives and work of these men today you will wish so to plan for the future that the great heritage you have received and possess may be guarded and shaped so as to serve the best intellectual and material interests of the generations to come.

ADJUSTMENT TO ADVANCE OF SCIENCE

We stand now indeed at a time of great anxiety and difficulty in the affairs of medical education and its proper development in relation to other studies. Within the lifetime of by no means the oldest in this room today there has been seen a rapid growth of the medical sciences and the medical arts beyond any parallel in any other period of the world's history. Mankind has advanced further in the development of the powers of medicine in the last sixty years than during the whole of the preceding twenty centuries. The generation just passing has seen the emergence of surgery from the murderous shambles that Lister knew, and from which he saved us, to the modern surgical theater with its refined, intricate and merciful arts. It has seen the rise of the science of bacteriology from its very birth. It has seen developments in various parts of biology and chemistry that have given origin to branches of work, each now claiming to be a separate science, and each showing the strong instinct of the young for setting up in its own house in its own way.

This great and recent expansion of the medical sciences and arts has come so rapidly upon us that little time has been given for the necessary adjustments and adaptations either in our ideas or in our buildings. In every university the machineries of finance and instruction have been strained, and a rapid succession of improvisations has been the only possible mode of growth.

In the field of research the whole body of knowledge has been advancing so fast that the individual workers at their various points on its growing borders are in danger of becoming so far separated one from another in the very course of their advance as to lose the fertility that comes from the easy exchange of idea and method. In the field of education our embarrassments have become acute indeed, both for the teachers and for the taught. The unfortunate students of medicine, who are not yet by any compensation of nature endowed with any greater average ability than their predecessors, are now nevertheless obliged when equally young and within the same period of time to acquire a much larger body of detailed knowledge;

* Read at a convocation held in celebration of recent medical progress at the University of Pennsylvania, Philadelphia, Oct. 10, 1930.

indeed, they must learn in several subjects not far from threefold that which was necessary only a generation ago. In every medical school the teachers feel acutely that circumstances are becoming almost too strong for them and that the medical student is now in danger of receiving not an education worthy of the name but only course after course of hasty and crammed instruction.

The efforts made in the universities of the United States to meet the needs of this time of almost fevered growth and transformation have been most remarkable, and they have been studied with interest and admiration by every other civilized country. You have had some great advantages. You have enjoyed great wealth, and this has been made freely available by private benefactors for enlightened public purposes. You have the fine tradition, sadly lacking still in many parts of Europe, that it is an honorable obligation for the sons of any university to repay some part of their debt of her by helping, according to their means, the expansion of her freedom and power. You have not been afraid to make bold experiments, to tear down buildings not fully efficient, and to adopt the best of what you can devise here or find elsewhere. You have been able by your variety of institutions to proceed, if we view the country as a whole, by the method of experiment, and all other countries have been able to gain by the study of the results, whether found in your educational methods or in your material installations.

Here in Pennsylvania you have had the advantage and the stimulus of possessing the senior of all the medical schools of the new world. Over a hundred years ago you had built more accommodation for your medical school than had been dreamed of then at either Oxford or Cambridge. Over fifty years ago you had taken the daring and original step of building a hospital as an integral part of the medical school within the university, and that is an advance that has not yet been emulated by any university within Great Britain, greatly as it is to be desired. You built a university laboratory of hygiene long before any other existed in Great Britain. You have not allowed, moreover, this early start and your seniority to impede you by any viscosity of conservative tradition. You have torn down and rebuilded, again and again. You now have a constellation of magnificent and well planned buildings, providing for research and education over all the great present fields of medicine. Your visitors here have cast admiring, though sometimes envying, eyes on these results of the planning by devoted and skilful men, and by the generosity of your benefactors.

Benjamin Franklin in his day spoke of the scanty resources to be found in Pennsylvania "in a hundred leagues," as he said "of our vast forests" as compared with those to be found in every part of England, England which he described as "that pretty island which is but like a stepping stone in a brook, scarce enough of it above water to keep one's shoes dry." Those of us who come, as I do, from that "pretty island" may well wonder what Franklin would have thought, and how greatly he would have rejoiced, if he could see the great buildings that now adorn so many acres of Pennsylvanian ground, the outward expression of the intellectual resources you celebrate today.

No doubt you have had your own anxieties here, as we have had in England, during these years of rapid expansion and building—anxieties lest particular endowments and the satisfaction of today's urgent need by buildings of particular kinds should bring, so to speak, a premature static crystallization in stone of the dynamic growth of rapidly advancing sciences. You may have anxieties again lest the funds that have been provided should be absorbed unduly by bricks and mortar, and not adequately invested in the proper maintenance and reward of the scientific workers, without whose ability and labors the buildings would remain an empty shell. All these anxieties yield problems that are to be solved only by trained knowledge and by a sensitive imagination; but they are problems of which the solution as it is worked out must affect for good or ill the development, health and happiness of all the generations to come.

EXTENSION OF MEDICAL SERVICE

William Penn said that the wisest man was he who could see farthest into the future. It would be a very wise man who could forsee in any detail the paths along which medicine is to advance in the days to come, or outline the new territories it will occupy. But we can draw at least some general conclusions from the intricate story of the recent rapid developments. We have to think of these under two main heads, one concerned with the growing extensiveness of medicine in its practical application, the other concerned with the intensive development of the fundamental sciences that serve it.

The very word "medicine" has for all of us, at first sound, and certainly for all laymen, a disagreeably narrow meaning. We think of the drug or mixture prescribed by the doctor in our illness. Doctors' potions indeed, by a curious mischance we must not now examine, have always unfairly attracted to themselves words far too dignified and too general for such narrow uses, whether "medicine" from the Latin, or "physic" from the Greek. Medicine in its proper sense has a far wider and nobler application. It includes all the sciences and all the high arts that the practicing physician or surgeon brings to serve his fellow man in disease or accident. But the true realm of medicine has already extended, and is still extending, far beyond this; more and more, as our knowledge grows, it is coming to have its domination in almost every activity and interest of human life. For one thing, it has become more and more addressed to the arts that are preventive rather than curative. In this audience and in this country I need not refer in any detail to the great and familiar triumphs of modern preventive medicine, whether in the fields of sanitation and hygiene or in the fight against specific tropical diseases. More and more, again, has medicine been brought to meet the practical needs of our modern industrial life and to guard the health, comfort and usefulness of the workers in factory, workshop and mine. You may well be proud in this country of the part your men have played in the development of tropical hygiene and of industrial medicine; brilliant instances of their achievements that have made life easier for the worker or more possible in the tropics will be in the minds of everyone here.

This modern extension of the fields of medical service has indeed been so rapid and far reaching that it is becoming almost difficult to find any department of man's daily business which it does not vitally affect. It may interest you to know that the British government has had recent occasion to find a formula for delimiting the field of medicine, and that which has been adopted by it is the following:

> Medical research deals by no means only with the cure of disease. It deals with the proper development and right use

of the human body in all conditions of activity and environment, as well as with its protection from disease and accident, and its repair.

You will see that in the vast territory here marked out there lies the whole volume of human life in all its daily business to and fro on the earth between the cradle and the grave.

With every year that passes now, moreover, the points of contact between the functions of humanity and what we have still perforce to call "medicine" are fast multiplying. We are bound to expect that the recent growth of medical territory is but little as compared with what our children will see in the coming years. I need point in illustration of this only to two, among the many, new territories, the new continents of knowledge, just opening before us. We are now only in the first dawn of our knowledge of the laws of nutrition, and of the ways in which the state of the body is affected by changes, often almost incredibly minute, in the exact quality of the food supplied to it. Even the successes already won in this field in the prevention of scurvy, of beriberi, of rickets and of deficiencies in teeth only show us dimly the immense possibilities that lie before us here of gaining new powers of controlling health and of evading disease.

We are now only at the dawn, too, of our knowledge of mental processes, and of the intricate links between states of the body and states of the mind. How dare we set any bounds to the empire that must open to us as growing knowledge becomes translated into new powers in education, new powers of finding by scientific method the choice by the individual of the work and career most likely to make him most useful and happy; and new powers again of maintaining or restoring mental health?

These illustrations I give must be so familiar already to you that I shall seem to be guilty of platitude when I say that the physician of the future must find his work to become more and more concerned with those two fields of nutritional science and mental science—with the healthy body and the healthy mind. May I, nevertheless, and in digression, point out to you here that though the practitioner has these two new worlds opening to him in which so great a part of his effective future work must come to lie, yet so rapid has been the advance of knowledge as compared with the motility of human institutions that even now, in Great Britain at least, the medical student receives at no point in his course of study any well based and organized instruction either in the field of nutrition or in that of mental functions. In those fundamental subjects he has to depend at present on little that deserves any better description than that of occasional gossip, while the resulting loss to the community at large is immeasurable.

DEVELOPMENT OF FUNDAMENTAL SCIENCES

While medicine has thus been extending its kingdom and multiplying the fields in which it has practical service to give to mankind, at the same time another development has been marking this age, an intensive development in which medicine has been bringing more fully into her service and discipline the fundamental sciences on which all the arts of medicine depend. The central science of medicine is physiology, the study of the functions of living matter and of the organized body. As knowledge grows the physiologist is taken deeper and deeper into the problems which on the one hand call for the technical methods of the chemist, and, on the other, need the methods of the physicist. In science it is not differences in kinds of knowledge that demand new buildings, but differences in kinds of technical method and apparatus. What was first called physiologic chemistry has now set up in her own chambers as biochemistry. Only thirty years ago there was no professorial chair of biochemistry in Great Britain; now chairs and separate buildings for it are to be found in almost every university. Here similar developments have come with ever greater rapidity and completeness.

The development of physics in relation to medicine seems likely to follow a more complex path. The direct application of physics in aid of the physician and surgeon by means of x-ray photography for diagnosis, and the use of irradiations of divers kinds for curative treatment, have called already for extensive equipments and for specially trained men to use and apply them. But physics is beginning to have a more primary and intimate part to play in biology and medicine than this. I need only mention the advancing study of colloidal states in relation to the processes of the living cell and the functions of the body; or, again, the analysis of the action of light radiations in producing from a given molecule, whether outside the body or on its surface, the still unknown but vital constituent of food—the so-called vitamin D.

Or I might point to the fascinating study by refined optical and other physical methods of those mysterious, elusive and invisible bodies, the so-called viruses. These are the agents of many of the most distressing, most fatal, and most expensive of diseases among men, live stock, and crops; they stand in size between the smallest known unit of living matter and the largest inanimate molecule; and they have almost incredible powers of rapid self-multiplication. Our hope of mastery over them appears to lie largely in the improved application to their study of refined optical and other physical methods.

You have been able to establish here already an institute for medical physics, providing for the development of physical methods useful in practical medicine as well as for the more fundamental researches in what may well be called biophysics. This significant venture will be watched from far and near with great interest and hope. You have happily so planned your scheme as to allow growth of the subject to follow its natural lines, so hard for us now to foresee in detail, and to follow in organic relation on the one side to the arts of medicine, and on the other to the primary sciences of living matter.

I would ask you here to note a feature of great interest in this story of the rise of biochemistry and biophysics—a feature of it destined, I think, to have a fixed importance in the history of medicine. Biochemistry was born the daughter of physiology. Medicine, indeed, has always been the mother of sciences. At the beginning, the trained organic chemist was inclined to think slightingly of his new cousin, the biochemist, who dealt under so great difficulties with material inherently evanescent, and, from the chemist's standpoint, so uncleanly and confusing. Almost everywhere a great change has come in this respect. The pure chemist has come to see that in the living cell are proceeding at great rate, and at low temperatures, transformations that he could have performed himself in the laboratory only at the cost of relatively immense energy and violence. Patient study of the chemical conditions and processes of the cell has already revealed truths of created wonder that otherwise would have lain beyond chemical knowledge. The chemist is now

entering into biochemistry not only to bring his long acquired skill to aid medicine but in order himself to make additions to chemical knowledge as such. The time will not be long deferred, as we must believe, before the physicist in like measure will increasingly come not merely to cooperate with those who are advancing medicine, but come so as to find in the world of living matter his own absorbing interest and his own opportunity for gaining new truth.

PLACE OF THE SCHOOL OF MEDICINE

What broad lessons of university policy are we to draw from considerations like these? I have endeavored on a broad view to sketch the double form of growth now manifest in medical development. I have spoken of the extension of its kingdom in every part of human life. I have spoken of its increasingly intensive use of the technical methods belonging to almost every branch of fundamental science. If we find these views of it to be true, what guidance do we gain for the future? To that I think the answer, again on broad lines, is both clear and simple. It is that the school of medicine should be, and should continue always to be, as here it has always been, an integral and organic part of the university. I would not play with words here but think in terms of realities. It is easy to retain a school of medicine nominally and formally within a university, and yet to segregate it as a self-sufficing technological institute. When I speak of a medical school as properly within the university, I mean that it would be embedded within the organic structure of the university, both as to its functional relations and as to its geographic position. It should bear its intimate share in the common intellectual and moral ideals of the complete university body. I would justify that claim on all grounds, whether those of the expediencies of today or those of the ideals that endure through all ages.

Let us take the lowest ground first, the ground of expediency; a school of medicine which is an independent unit, or which is divorced organically from its university in function or in geographic distance, can hardly hope to be more than a school for producing well trained practitioners; it can hardly hope to attract any recruits to the service of medicine other than those who, from the beginning, seek to fit themselves for professional practice. The practice of medicine offers indeed one of the noblest of all callings, and you will not think that I do not hold it in the highest honor. "The skill of the physician shall lift up his head; and in the sight of great men he shall be in admiration." The fields, however, in which medicine has to give service to human life have extended already, as we have seen, and have still to extend, far indeed beyond those of the professional practice of curative medicine. Divorcing a school of medicine from the free current of university life must have a double peril. It must endanger the width of outlook of those who are being trained to enter a profession in which, of all professions indeed, a primary qualification for success is a sympathetic understanding of the ways and thoughts of other human beings. At the same time the isolated medical school is in danger of sacrificing to the visible needs of the practitioner of today those wider destinies which, as we have seen, are now opening so rapidly to medicine over so many and diverse fields of human activity.

If dangers come, as I submit, from a narrowness of outlook that may impede the free development of the service medicine has to give in the future progress of mankind, other dangers again will come in another way and in high degree from any isolation that tends to divorce medical studies from the system of disinterested scientific studies within the university. It is vital to medicine to maintain her increasingly intensive use of the primary sciences. Any secession from the unity of knowledge brought about by the undue segregation of medical studies must pay some penalty in weakness and sterilization. This is no empty phrase. It is a truth which practical experience, both positive and negative, has established again and again in many places. It is a truth of which the working out may come in many different forms of reality.

It may be enough now to point only to the damage done to the recruitment of able minds to the service of medicine, if medicine stands apart as a purely professional study. The history of medicine bears name after name of illustrious men who, with no thought of professional practice, have come into her service, attracted and recruited by some chance contact with her claims and her charms. At no time has this been more evident than in the past generation, and it has been evident just in proportion as university organization has facilitated the best freedom of exchange in men and in ideas among the several sciences and faculties. If the negative experience be sought, it may be found in the relative sterility that has marked those departments of medicine that have been so organized or so placed as to receive only the narrowed stream of students vowed from the beginning to one avenue only of medical service.

These, in outline only, are the arguments based on grounds of practical expediency alone, and they are weighty enough. But there are higher considerations to be taken into mind. Medicine must lose immeasurably if her studies are withdrawn from the atmosphere of university life and the impact of university ideals. The essence of a university lies in that bond of sympathy in a common pursuit which unites all the workers in all her faculties; a sympathy that brings a mutual understanding of the general relations of all branches of knowledge, of their limitations and of their difficulties. It is through this universality of sympathy, and only by making the whole field of knowledge her kingdom, that the university can place her true mark on her sons. It is the simplicity of this single purpose that marks the university, and not the complexity of her studies. The common spirit that unites all her workers is the furtherance of knowledge for its own sake, and the dedication of it to the highest purpose. Can medicine afford to lose her birthright in this community of work and aim? Can any university suffer without grievous loss the abstraction of that reinforcement to her influence that comes from those high intellectual and moral ideals that should be the life blood of medicine?

Some recent events may make us reflect here that the true ideals of a university unite no less within a common bond the universities of all the nations. With this is bound up the instinctive and habitual recognition by every worker of the debt that he owes to his predecessor and contemporaries in all parts of the realm of learning, and of the gain that comes to his own progress from the rapid and untrammeled interchange of knowledge and ideas as they are won by free inquiry. It should rightly be unthinkable that any university giving faith to these ideals should engage in claiming monopoly rights or making financial gain in the practical uses of any piece of knowledge, and least of

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all that it should exercise any ostensibly legal rights of monopoly so as to cause restrictions of free inquiry elsewhere. Every great step in knowledge won within a given university is based on all the long labors in other universities that gave the earlier steps. To take monopoly value from the accidental chances that link new knowledge with possibilities of commercial profit is to betray the essence of the university spirit. It seems also to be as inexpedient on a long view as it is improper. Rich men have most generously aided the universities of Canada and the United States. Will they be so willing to find help for a university that cares to make large profit by taking for itself the ripe fruit that falls from the tree planted and grown by workers elsewhere throughout the world? If financial gain comes to a university in that way there must arise, moreover, the grave dangers of a vicious indirect influence affecting the outlook of all the individual workers within it. It will be difficult for them not to feel that the university will be more inclined to reward by pay or promotion him who makes some addition to knowledge of an immediately profitable kind rather than him who works for the sake of knowledge itself. Nothing could be more disastrous than this, as we know, to the advancement of knowledge itself, and in the long run, indeed, to the material gains of the world. Only those who know the intimate realities of research work can realize how much the world will lose if the now open door of the medical laboratories becomes jealously closed.

PROGRESS THROUGH KNOWLEDGE FOLLOWED FOR ITS OWN SAKE

The servants of medicine have the challenge always before them of a direct objective, near for some, more remote for others, but always in sight—that of lessening pain, and of bringing to their full development the mind, body and estate of mankind. Little wonder if in their eagerness to press on to their goal they feel impatience of any but the paths that seem so direct and obvious. But here the lessons of science are the same as the lessons of high morality. The work of mercy can be effective only so far as knowledge guides it; and new knowledge comes, as long experience has taught, to him most fully who seeks it for its own sake first. Charity and loving kindness to our neighbor is a high commandment indeed but it was called the second commandment. The first and great commandment is to give with the whole heart and the whole mind our worship to truth for its own sake and for the sake of the beauty that it reveals.

In the air of a true university, these fundamental lessons are learned as a part of everyday reality. I venture to say that these ideals of the university spirit have been your inspiration here from the beginning, and that your great school of medicine, fostered for more than a century and a half as an integral part of the university and as one of her most favored children, has grown to her present stature under their guiding influence. Those of us who are honored by being with you here today have rejoiced in your recent accessions of strength and opportunity. We wish you Godspeed from our hearts in the further progress of your university medical school. Its work in the past and in the present may surely encourage you in a high confidence that it will now, in renewed and growing strength, go forward to service beyond any present calculation in the advancement of knowledge, the conquest of pain, and the elevation of mankind.

15 Holland Street, Kensington, W. 8.

THE PHYSICAL REASONABLENESS OF LIFE *

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When I had the honor to propose my friend Professor Bronk as a member of the British Physiological Society I cited, as one of his qualifications, that he had written papers on astrophysics. This—as you may imagine—was not meant entirely seriously; nor will you charge me with supposing that a knowledge of astrophysics is, in itself, of use in physiology. There may even have been a gentle note of provocation in what I did; I may have hoped to draw an echo of protest from Prof. J. S. Haldane, who contrives—not quite seriously—to object to the use of what he is pleased to call mathematics in physiology. The most serious things, however, are often said and done with a smile. At the back of Haldane's mind, disguised in his laughing insults to quadratic equations and his jesting horror of electrical apparatus, is perhaps the strongest motive of his intellectual, one might almost say of his spiritual, life, the faith that in the living organism regarded as a whole there is something which is not simply present-day physics, the insistence that the conception of an organism is as fundamental to biology as those of electricity, space and time are to physics. I did not succeed in provoking him when I proposed Professor Bronk for membership; which is perhaps as well, for, in spite of our mutual recriminations on the subject of what he calls "mathematics," I am proud to reckon myself, in philosophical matters at least (and when I can understand him) to some degree as his disciple; indeed, if he is not abusing me for being a mechanist he is blaming me for being a vitalist—which apparently is as bad though the average is right.

I am not intending to tell you today—you have heard it often enough and it is not true—that the phenomena of life could be explained, at least by some one clever enough, in terms of the physics and chemistry of the present time. Whether the future physics and the future chemistry will suffice I will not guess; when the events of physics have become indeterminate, and the physicists, poets and mystics; when chemistry has become physics, and the chemists have become physiologists; then, indeed, the situation may be different. Until that day I shall continue—with Haldane—to insist that in the organism regarded as a whole we have a phenomenon of a different kind, one whose unity and fundamental nature are as essential as any of the concepts of physics. Why I wanted to provoke Haldane in respect to Bronk's wild oats is that I hold, and he in theory does not, though in practice he does, that the most fundamental way of investigating that organism is the way provided by physics; and that to employ physics properly biology needs, not people who have read it up the day before in an encyclopedia, not people even who might get a good second class degree in it if they tried, but the proper article. It is because I know that Bronk is the proper article and feel that his new department, the Johnson Foundation for Medical Physics, represents a great and fundamental step forward in biology and medicine, not only in Philadelphia but in America, that I have had the impudence to come here today to address you.

* Read at a convocation held in celebration of recent medical progress at the University of Pennsylvania, Philadelphia, Oct. 10, 1930.

SCOPE OF PHYSICAL METHODS

Physical methods alone—and those of the best—are adequate to investigate the physical phenomena of life. Some people will say that in describing these phenomena as physical we are missing their essential biologic import, we are drawing a red herring across the trail. I do not believe we are. Convinced as I am that no physicist, however bold or learned, with the aid of all his wave mechanics, his quantum theory and his relativity, can hope to describe the whole of our behavior here this afternoon as due to the properties of proteins and electrons, certain as I feel that Laplace was wrong in believing that, given the motion of all the particles of matter at any moment, a sufficient intelligence could predict all future history, nevertheless, I am quite sure that when a living organism shows phenomena of any kind which we can appreciate by our senses, those phenomena and their nature can best be investigated by physical means. And I am equally sure that such investigation will be very profitable for the future of biology, and in the end—through medicine—for the welfare of mankind.

There is really no contradiction here. If you take any of the machines conceived and made by man you will find that their detailed characteristics are essentially of a physical and chemical nature; the properties of steel and brass, of oil and water, of electricity and magnetism, of lead and acid, of copper wires and insulating tape, may all be investigated by physical and chemical means—he would be a poor engineer who held otherwise. Yet a man-made machine is essentially a human phenomenon: it was designed for a purpose, it fits man's biologic needs, it has adaptability or flexibility as we say, within certain limits it continues to function in spite of changes in its environment. In a minor way a medicine is an organism, part of the greater organism of human society.

There is nothing biologic about the properties of copper, steel, carbon, rubber and shellac; yet to deny the rôle which an electric motor or a dynamo may play in human affairs would be idle and absurd. There is clearly an essential difference between a complex electrical installation, regarded as a whole, and the materials of which it was built up. Design and purpose are apparent in the former, adaptability and coordinated response, properties inherent in the human minds which designed and built it, but not at all in the properties of matter as such. The engineer, however, who attempted to study, or to design, machinery without a very complete knowledge of those properties, would land himself in insoluble perplexities; his machines would never work.

The driver of an automobile may be, he sometimes is, acquainted with the purpose of the several parts of his machine. To construct, or to repair, however, requires very much more knowledge than merely to drive; and the physical properties of the materials are, though it may not always be apparent to the layman, the basis of the whole design. Had aluminum had all the properties of steel, except its density, copper ten times its actual conductivity, had air consisted of 79 per cent oxygen and 21 per cent nitrogen instead of vice versa, had the intensity of gravitation been ten times greater or less, what extreme differences there would have been in engineering construction and design! So it is in biology: the properties of matter are its foundation; the detailed phenomena which appear in the living organism, of which we are aware through our senses, are physical or chemical in nature and must have a physical or chemical basis. It is inconceivable, indeed, that if phenomena involving heat, light, sound or electricity are witnessed in a living cell these should not be found to depend on other factors of a physical kind. Unless we believe in magic, and as scientists presumably we do not, we must hold it as inconceivable that any physical effect whatever should not be linked with some preceding physical cause.

To that extent the physiologist must be a complete and absolute mechanist—he must admit no judgment except that of experiment, no immediate cause of any individual phenomenon except the material physical one preceding it. His problems are very difficult and complex, they may require more knowledge, more intelligence, more skill for their elucidation than at present he possesses. No matter, it is futile, not to say impudent, to assume that because his limited powers, now and here, cannot solve them, therefore they are insoluble and some form of magic or miracle must be invoked.

The title of this address was chosen with care. Convinced as I am that the whole intelligence of man, and not that particular corner of it which is concerned with exact and quantitative reasoning, is adequate to grasp the full significance of life in the biologic sense, I would much rather claim too little than too much. I do want, however, to insist that life is physically reasonable, in the sense that its detailed characteristics can best be studied by exact and quantitative experimental methods. For some years I was responsible for teaching physiology to medical students; and I frequently asked myself—or they asked me—what was the good of teaching them this and that? Why should they learn about frog's muscles and nerves, about the electrical change of the heart, about membrane potentials, and hydrogen ion concentrations? Why should they be forced to study mechanics and to pass an examination in physics? Most of them would have no use for these things in after life; a little more personal skill in handling patients might serve them and the patients better. One answer, I think, is this: they must be made to feel what I have called the physical reasonableness of life. A belief in magic is still widespread; who among us is quite free from it? And we do not want to be quite free. The common folk are all too ready to trust in the magical power of medicine or of treatment and to think of doctors as wizards or magicians. It is fatally easy to believe what it is convenient to believe, and the education of a medical man should lead him to the instinctive and confident view that magic has no place in medicine, that it is professionally dishonorable to believe, or to suggest, explanations of phenomena or methods of treatment which are physically unreasonable. To give physics, and physical methods competently and critically used, a high place in your medical curriculum is to set men's faces definitely in the right direction, and your influence against the spread of magic and fraud.

THE JOHNSON FOUNDATION FOR MEDICAL PHYSICS

We are celebrating among other things today the noble gift of Mr. Eldridge R. Johnson, from which has arisen, under the far-sighted inspiration of his friend Dr. Alfred Stengel, the Johnson Foundation for Medical Physics. It is fitting that in the oldest medical school of this continent, in the city of Franklin, one of your greatest experimental philosophers, there should be this opportunity given to see how far modern experi-

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mental philosophy can aid in the understanding of life and disease in the alleviation of human suffering. To show how this may happen I cannot do better than refer to the booklet which has been prepared to celebrate this occasion.

> As research thus yields a more quantitative understanding of vital processes in terms of these physical principles, it becomes increasingly possible to approach clinical problems from this point of view. It is one of the aims of the Foundation, therefore, to interpret pathological and normal biological systems in terms of physics; to study the effect of physical agencies such as light, heat, sound and electricity as normal factors and therapeutic measures; and to make the results of such investigations readily available for clinical use. As a consequence of such developments modern clinical practice and medical research are constantly meeting difficulties which can only be solved by men trained in the physical sciences. A second function of the Foundation therefore is to make available to the medical school an organization capable of solving specific problems that face the clinician either in the ward or in his research. This cooperative research makes possible a more adequate physical approach to many medical investigations and keeps the staff of the Foundation in close touch with practical problems of the clinic. A related type of activity is the development of new methods and apparatus for medical treatment, diagnosis and research. . . . A modern well equipped shop and instrument-design room are located in the Foundation laboratory and are under the direction of a graduate mechanical engineer who is in charge of design and construction of apparatus. These facilities are available to all departments of the Medical School. The increasing use of physical agents in therapeutics, the increased possibility of approaching medical and biological problems from the physical viewpoint and the usefulness of biophysical methods in the solution of medical research problems indicate the need for better training in this field. Members of the staff are available for lectures on established courses on such phases as are of a physical nature. Graduate work is offered leading to the degree of Doctor of Philosophy in cooperation with other departments of the Medical School and the Department of Physics. And one research fellowship is offered each year to a medical graduate of at least one year's standing, which offers full time for research on a problem of clinical interest that is of a physical nature. Through these instructional activities the Foundation hopes to increase the supply of workers in this field and to improve the capacity of the medical profession to utilize physical methods and principles. Thus established to carry out these several purposes, the Johnson Foundation promises to render a unique service to medicine and to lead the way in a rapidly developing field.

I could not summarize better than by these extracts the motives of those who are attempting all over the world, and particularly here, to apply the methods and ideas of physical science to biology and medicine; and I am completely confident that so long as Bronk is skipper of the ship, the faith of those who planned and endowed this new adventure will be rewarded by rich and wholesome cargoes.

COMRADESHIP IN SCIENCE

For those who sail and adventure—as Bronk and his crew will do—in the seas which lie between one region of science and another, life is not dull; strange, unexpected and valuable things turn up as the result of contact between different kinds of culture and different types of mind. What does not physics owe to mathematics, chemistry to physics, physiology to both of them and to zoology, anatomy and medicine? One of the happiest comradeships in science was that of Bayliss and Starling, the one essentially a physicist in outlook, the other a biologist. It is said by those who ought to know that few Englishmen of the present day have served clinical medicine so well as Sir Thomas Lewis the physiologist; certain it is that English physiology owes a great debt to the discoveries of Sir Thomas Lewis the clinician. Lewis's discoveries in cardiology were made possible by Einthoven the physicist; Einthoven the physiologist with that charming modesty which made us love him so much retorted that without Lewis's discoveries nobody would have thought of giving him the Nobel Prize for Medicine—which maybe was true. Hopkins played a leading part in the discovery of vitamins; I wonder how far he would have gone on that path had he not been chemist enough to discover tryptophan. The beautiful work of Erlanger and Gasser and their colleagues on action potential waves in nerve was possible largely because Gasser, alleged to be a pharmacologist, is by instinct and taste an electrical engineer; the no less beautiful work of Adrian on the physical basis of sensation was made possible, as Adrian himself confesses, by the invention of the amplifying valve. Kieth Lucas, one of the greatest of English physiologists, was a first-rate mechanic and instrument designer; his father's connection with the Telegraph Construction and Maintenance Company, and his voyages in the company's cable-laying ships, had early given his mind an instructive bias to electrical methods. Helmholtz's studies in the physiology of hearing and vision were possible only because of his mathematical and physical knowledge. One of the happiest men in the world is Sir William B. Hardy, zoologist, colloid chemist, physiologist, physicist, engineer, now director of a laboratory in Cambridge for studying the problems of refrigeration, all his life a sailor and adventurer in unknown seas. I need not weary you by a longer recitation of names; you know many such men in your midst; and they are, like Hardy, happy men, who could not dream of giving up their adventures on the high seas between the different sciences for any stay-at-home job.

The increasing speed of scientific development, and the increasing specialization which results, make it the more necessary that a certain number of research workers should be trained and interested in two sciences at least and working in the field between them; otherwise great and important possibilities may be missed. It is impossible for a single man to cover the whole field of science; it is becoming impossible to be acquainted with the whole of any single branch of it. If there is to be coordination and not confusion there must be continual overlap; the zoologist can make contact with the chemist if both know something of physiology; the clinician with the electrical engineer if both know something of physics; the bacteriologist with the biochemist if both know something of zoology. It is apparently too much to expect that professional physicists or mathematicians—except in rare cases—should know anything of biology; unfortunately it is possible to study physics and mathematics at school and university, to the exclusion of almost everything else, certainly of that major half of natural knowledge which is contained in biologic science. This may produce excellent physicists and mathematicians, but it leads to a singularly one-sided, one might almost say an uneducated, view of the real world; and, judging from the number of distinguished physicists who are prepared to dally with spooks and spiritualism, to a very unsophisticated and uncritical outlook on anything but their special subject. Be that, however, as it may, the fact remains that in general we biologists, and you medical men, can expect very little direct help from the majority of physicists and mathematicians; it is

necessary that some of us should study these matters for ourselves.

This is no small task—the discipline necessary for an adequate and critical use of physical methods and ideas cannot properly be given in the crowded years of a medical course. It is necessary that a certain number of properly trained physicists should be attracted to biology and induced to turn their attention to its problems. We want men with disciplined and critical but also with adventurous minds to guide us in the seas which separate biology from physics; and rich are the prizes they will help to bring home to port.

VARIOUS APPLICATIONS OF PHYSICS

Let us return to the title, the "physical reasonableness of life." Consider the biologic effects of radium. Most of us have heard of the great success of radium, properly used, in treating certain forms of cancer, particularly cancer of the breast; we all know, however, that the high hopes with which its general use in cancer has sometimes been proclaimed have not been entirely fulfilled. There is no doubt at all of the effect of radium on living cells; but, strange to say, the mechanism of the effect is still uncertain. There is presumably nothing magical about it. X-rays act in a similar manner; both may work by releasing high-speed electrons in the interior of the cell. Why, however, and in what way should a normal cell be affected by a high-speed electron? It is not impious to ask, any more than to inquire why the human body needs water after exercise on a hot day. There is presumably an answer. How many such electrons are required per cell; within what range—if any—must their velocity lie; what part of the cell must the projectile hit; which cells are therefore the more susceptible; why are certain cancer cells apparently more readily damaged and destroyed by the bombardment than are normal cells, or may not the effects be due to stimulating the good cells rather than to injuring the bad ones? Such questions are obvious enough—and if we believe in the physical reasonableness of life they must have answers which presumably will not be too difficult for human beings to understand.

Consider the common hen's egg. The yolk represents a single enormous living cell, surrounded by a very delicate extensible membrane; it is suspended in the white; any physical chemist, and most biologists, would have guessed that yolk and white would have the same osmotic pressure. Not a bit of it! The osmotic pressure of the yolk is one-third greater than that of the white and remains so for many days, even in the complete absence of oxygen, so long indeed as the egg is alive. The phenomenon is obvious enough; there is no magic about it; it is surely not impious to inquire about it; no purely biologic reasoning can throw light on the matter, which may prove to be very important; if we believe that life is physically reasonable we must use physical tools for its elucidation.

The little red fiddler crab, *Portunus depurator*, always lives in deep sea water. He has no mechanism to withstand a dilution of his environment. Put into diluted sea water he rapidly changes the concentration of his body fluids, presumably by transfer through his gills, until in four or five hours he has come into equilibrium with his new surroundings. In 50 per cent sea water he dies; in 75 per cent he may live, apparently indefinitely. The shore crab, *Carcenus maenae*, on the other hand, must be ready to meet diluted sea water in estuaries, or concentrated sea water in pools. He may tolerate 25 per cent sea water for days, slowly diluting his body fluids until they reach an apparently steady value isotonic with about 60 per cent sea water. His gills presumably are permeable to the salts of sea water but are able also to resist their passage; they have very different properties from those of the fiddler crab; they are,—though initially permeable—able finally to tolerate a considerable difference of concentration on their two sides, an admirable property, essential to the crab's existence, very important presumably in some of our own cells, e. g., in the kidneys and alimentary canal, but depending on factors quite unknown. To attribute the phenomenon to some vital action of the cells is merely to put it in a certain category, not to explain it. Is it analogous to the case of the hen's egg, has it anything to do with edema or secretion? If so, the further investigation of such things by physical and chemical means may provide us with a harvest of useful information.

Few subjects are more important than physical pain. Its nature has been debated since man began to ask questions. Philosophies and religions have taken cognizance of it; few men can face it with equanimity; a disregard of it has been reckoned one of the greatest virtues. Who would have thought that the study of electrical changes in living tissues on the one hand, and of the conduction of electricity through gases on the other, would have led to the beginning of understanding at least of its physical nature and accompaniments? Yet such is indeed the case. With the aid of amplifying valves, and the beautiful physiologic technic which Adrian has invented, painful impulses in single nerve fibers can be seen on a screen, or heard in a loud speaker, intensities of pain can be measured, the difference between pain and mere sensation made clear. The philosopher may say, But this is not pain, only an accompaniment of it; maybe; but at least if the impulses are stopped the pain will end. If we can understand the nature of these impulses and the manner in which they originate, if the quantitative nature of the physical basis of all sensation can be properly described, then indeed a new field of research will be opened in neurology and a new era in medicine.

It is now beyond dispute that the principle of the conservation of energy applies just as rigidly to living cells as to the rest of the world. By Prof. Graham Lusk and his associates in New York, accompanying and following a long succession of workers in all parts of the world, this principle has been made the foundation of the science of nutrition. Vitamins indeed and salts and other things there must be, but a certain minimum of calories is essential. The animal machine, just like the steam engine, must be fed with combustible fuel to supply it with the energy it needs. In this respect at least nobody believes in magic any longer; the living cell can no more produce energy than it can produce matter out of nothing. This particular application of physics is obvious and complete; and without it a large part of the sciences of life would be unintelligible. Let us remember it when we consider the importance of biophysics.

THE GREATER ROMANCE

In a public speech it is wise to attempt to move the hearts, as well as to interest the minds, of one's audience. It would be very difficult, however, indeed well nigh impossible, to move men's hearts much by reference to the achievements and the future usefulness of a branch of science. I have urged that we must not

believe in magic—that a training in physics and biology, an acquaintance with the facts of medicine and neurology, will prevent an unreasoning belief in spooks and spiritualism and miracles; a most depressing conclusion, for it is romance and magic and miracles which really move men's hearts, however hard they apparently be!

> "Romance is dead," as Kipling said, "and all unseen
> Romance brought up the 9:15."

The greater romance remains. Did we believe in the stories of spiritualism, in the alleged antics of the spirits of those who have passed on, we should be forced to conclude that the next world is filled with gibbering idiots. Did we hold with many common superstitions and accept many common forms of magic, we should have to conclude that the Ruler of the World ought really to be shut up in a madhouse. The world is not less beautiful if bits of it become intelligible; a tract of country is not less romantic if we carry a map; the sky is not less blue if we know that the blueness is due to the scattering of light by particles or molecules far up; there is no less pleasure in achievement if we use good tools than if we use bad ones. In scientific research we work and work, sometimes for months and years, in digging a tunnel with no apparent results; then suddenly comes the supreme joy of life—daylight begins to glimmer at the end, and in a few minutes we see that nature, after all, has not played us false. To one who works honestly and accurately, these moments are sure to come. And in using physical methods the joy is so much the greater because the achievement is more sure. Not only do we find the promised land, but often its details agree with surprising accuracy with the quantitative forecasts that have been made about it.

It is no use, therefore, to tell a scientist that romance is dead, or a physiologist that physiologic problems are insoluble; the emotions he has experienced in finding new worlds will effectively prevent him from believing you. No joy can be greater than to find convincing evidence for one's faith that nature is ultimately reasonable, no emotion more satisfying than to achieve exact and quantitative verification after months of trial and experiment. Do not think, therefore, you who live amid the romance of helping your suffering fellow-men, that the new laboratories here are peopled with patient drudges, moved perhaps by intelligence but never by emotion. There may be as much real poetry, as much real magic, as much real romance, within these walls as a human life can hold.

It is a necessity of religions that they should have creeds but a failing of some of them that they make these too long and incredible. In science also, which is a form of religion, we need creeds, but let us take warning and keep them short. May I suggest one to Professor Bronk for the Johnson Foundation?

"I believe in young and intelligent minds; I believe in the value of careful experiment and observation, and in the very special virtue of accurate quantitative measurements; I believe in the utility of theories provided they be not regarded as facts; I admit the necessity of criticism and disbelief; I hope and pray for the damnation of those who are not strictly honest; and I am convinced of the complete reasonableness of natural phenomena."

Believing in these things as he and his colleagues do, rejoicing in the supreme opportunity supplied by the generosity and wisdom of those who gave and planned and executed, I foresee for them a future of work and adventure which cannot fail to bring rich fruit, to themselves and their colleagues in this, the oldest of American medical schools, and so to the rest of the world.

I must not let this afternoon go by without a word of thanks. You have treated me with much honor in asking me to address you on this great occasion. I wish I could have said something of more dignity and value, something more worthy of the years of work and forethought which have gone to make the occasion possible. It is strange that you should have thought to invite Sir Walter Fletcher and myself to address you on the same day. It is almost precisely a quarter of a century ago—within a week—that I became, by fortunate and romantic chance, his pupil at Trinity College, Cambridge. It is almost precisely a fifth of a century ago that, as the result of his advice to study physiology, I became a Fellow in our College. I know he regards me with a certain parental affection, as I him with filial pride: it has moved us deeply that after this quarter of a century we should be coupled, as you have coupled us today, in the honors you have done us. It is strange, too, that you should have asked me to speak on the same occasion as Dr. Welch. I have been honored by many kindnesses from Dr. Welch, and one of my treasured possessions is a photograph of himself dressed as a brigadier general in the American army. I understand that in spite of all his achievements, in spite of all the honors which have befallen him, in spite of his supreme rank in American medicine, he is sufficient of a schoolboy still to get more joy from the uniform of a brigadier general than from all the rest. If friends in England can make any one an Englishman, then Dr. Welch is one, so the strangest thing of all is that three Englishmen have been invited to address you today. Whatever your motive, I am inclined to think that it has something to do with a special item in the Scientists' Creed which I omitted before with the intention of including now: "I believe that the pursuit of knowledge, for the welfare of the race, is one of the greatest agents of good will between men in every land." Our theories may be wrong—which does not matter much—our observations may not prove accurate enough—which is bad—our experiments partial and misleading—which is awful; but the fact that we have marched side by side in an honest endeavor to conquer ignorance, that we have sailed the unknown seas together in search of adventure and truth, and that we have learned to understand and love one another not only as fellow workers but as fellow beings—these things cannot fail to draw us together and so to minister to the welfare and comradeship of the different varieties of men. Such at least is my firm faith. I see in science and medicine more hope of cooperation between the nations than in any other field of human endeavor; and some such motive, I imagine, inspired you to invite two Englishmen, and an honorary Englishman, to take part in this great and intimate occasion.

16 Bishopswood Road, Highgate N. 6.

The Bond Between Doctor and Patient.—Any reorganization of the medical profession that threatens the personal bond between doctor and patient is to be viewed with suspicion, even if the object appears at first sight to be more thorough and careful practice. With the exception of the relationship that one may have with a member of one's family, or with the priest, there is no human bond that is closer than that between physician and patient (or patient's family), and attempts to substitute the methods of machine or organization, be they ever so efficient, are bound to fail.—Peabody, F. W.: Doctor and Patient, New York, Macmillan Company, 1930.

THE DIAGNOSIS OF TUMORS INVOLVING THE SPINAL CORD*

HENRY W. WOLTMAN, M.D.
ROCHESTER, MINN.

I propose to limit my consideration of tumors involving the spinal cord to diagnosis, which is the phase of particular interest to medical men and which has, as its natural sequence, proper treatment. The patient's story is the most important step in diagnosis.

DIAGNOSIS

Pain.—The earliest and commonest complaint is pain. In more than 300 proved cases of tumor of the spinal cord at the Mayo Clinic, pain was present in approximately 80 per cent. The average duration of the symptom was well over two years. Frazier [1] noted the duration of the disease to be twenty-eight and four-tenths months. The pain may be in the spine at the site of the tumor; it may be referred to the lower extremities even when the tumor lies high in the canal, but usually it is referred along the distribution of a posterior root, when it is known as a root pain. It is the peripheral radiation of root pain and its various qualities, such as aching, squeezing or piercing, that so frequently suggests disease of the pericardium and pleura; of the biliary, urinary and gastro-intestinal tracts; of the peripheral nerves, and of muscles and bones.

Fortunately, root pains have certain characteristics. They are segmentally distributed; that is, lengthwise in the arms and legs and circularly in the trunk. Then, since tumors grow, the pain becomes more and more intense and adjacent roots become involved; unilateral sciatica becomes bilateral sciatica, and unilateral trunk pain has added to it a complementary pain on the opposite side, completing the so-called girdle. Since there are usually no diseased organs at the site of the pain, there is, as a rule, no local tenderness. Coughing, sneezing, compression of the jugular veins, or, in short, anything which suddenly increases the pressure of the spinal fluid aggravates the pain. Root pains have a habit of awakening the patient from sleep at 3 or 4 o'clock in the morning. He discovers that relief may be obtained by walking, or by sleeping in a chair. In both of these positions the spine becomes relatively shorter. A helpful test consists in flexing the head sharply on the thorax; this simple maneuver often elicits or accentuates the pain. The explanation is probably to be sought in the resulting traction on the cord and dura, and in the increased congestion within the head which displaces the cerebral fluid into the spinal canal. A blue pencil, which Richard Bright referred to as "the most useful instrument of the physician," will be found helpful. It is important to know the precise site of the pain, which may be marked on the patient. The dates of its appearance and its radiation should be recorded.

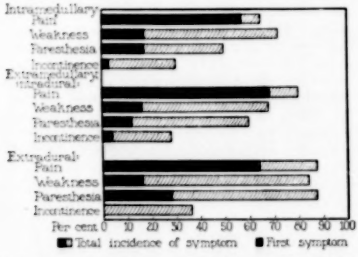

Fig. 1.—Frequency and order of appearance of four cardinal symptoms of intramedullary, extramedullary, intradural and extradural tumors involving the spinal cord.

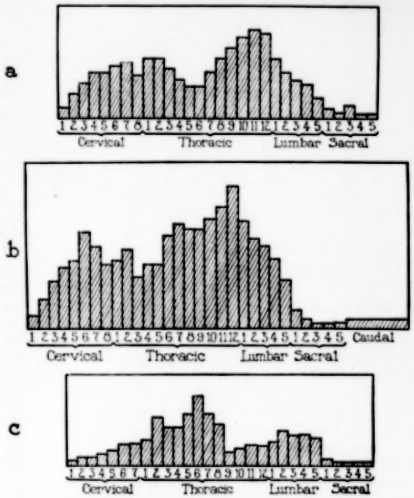

Fig. 2.—Incidence at various segmental levels of 312 tumors. Diagrams are based on Craig's figures: *a*, eighty-nine intramedullary tumors; *b*, 156 extramedullary intradural tumors; *c*, sixty-seven extradural tumors.

Disturbances of Motility.—By and by the patient may become aware of clumsiness in running, or of outright muscular weakness. As a rule, the weakness is slowly progressive. The weakness is usually due to injury of the corticospinal pathway, pyramidal tract, or upper motor neuron. The homolateral muscles below the level of the tumor, although they retain their bulk, become weak and spastic; the tendon reflexes are increased, and scratching the sole of the foot results in extension of the great toe. Inspection of the tips of the patient's shoes may show a decided difference in wearing.

Sometimes the paralysis is due to direct injury of the contiguous anterior horn cells or ventral roots, which together constitute the lower motor neuron. If this occurs, the segmentally related muscles fibrillate and become atrophied, weak and toneless, and their reflexes become correspondingly feeble. By consulting suitable charts, the level of the nerve cells that innervate muscles so paralyzed may be determined. This type of paralysis is the best of localizing signs.

Some patients collapse suddenly, arise, and wonder why they fell; this often happens in case of dumb-bell-shaped tumors which lie partly within and partly without the spinal canal, and may be due to transitory compression of the cord. Other patients who become

* From the Section on Clinical Neurology, the Mayo Clinic.
* Read before the Section on Practice of Medicine at the Eighty-First Annual Session of the American Medical Association, Detroit, June 26, 1930.

1. Frazier, C. H.: Surgery of the Spine and Spinal Cord, New York, D. Appleton & Co., 1918, pp. 498-608.

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suddenly weak may have suffered from hemorrhage or softening of the cord incidental to the tumor.

Disturbances of Sensibility.—Subjective sensory disturbances appear sooner or later. The patient may complain that his underwear is unbearably irritating; the feet may be "dizzy"; the limbs may move to unanticipated positions; there may be burning, tingling, or a wooden sensation. These disturbances result from interference with the posterior roots or conducting tracts in the cord, as will become apparent in the accompanying reports of cases.

Disturbances of Sphincteric Control.—Disturbances in the sphincteric and sexual spheres may add to the discomfort of the patient. That these complaints do not vary greatly with the situation of the tumor is shown in figure 1.

Following spinal puncture, aggravation of all symptoms is common; a neurologic examination may then enable one to establish a level of disturbance with ease when it was impossible before.

ILLUSTRATIVE CASES

Although the history of the case leads one to suspect tumor, the diagnosis rests largely on the objective examination. A working knowledge of the anatomy and physiology involved must be the guide. Three cases, in which tumors were found at different segmental (fig. 2) and transverse (fig. 3) situations,[2] will help to illustrate some of these points.

CASE 1.—A man, aged 32, who was left-handed, complained of paralysis of the left arm. Four months previously he had noted an aching pain in the left occipital region, which was present on awakening and gradually wore away after he had eaten breakfast. He had become constipated and had found that he could not void urine until his bladder had become well filled. Three months before his admission to the clinic he had noticed that the left arm felt heavy and that he had to look carefully at an object when he attempted to pick it up with his left hand; otherwise it would escape his fingers. He had become aware of a slipping sound made by his left foot when he walked. One evening, much to his surprise, he had stepped with the left foot into a scalding hot bath, which, tested with the right hand, had seemed to be neither hot nor cold. Subsequently, the right half of the body had tingled constantly. On occasions he had vomited unexpectedly. The

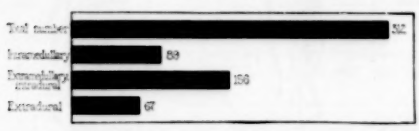

Fig. 3.—Transverse positions of tumors, based on Craig's analysis.

story was one of progressive disability, beginning with pain in the left occipital region, followed by vague sphincteric disorders, impairment of joint sensibility in the left hand, left hemiparesis, right hemithermanesthesia, and symptoms which suggested increasing intracranial pressure.

Over the right half of the body below the distribution of the fourth cervical segment there was loss of appreciation of pain and temperature, but appreciation of touch was normal throughout. Since painful and thermal stimuli cross to the opposite side of the cord, their loss on the right side suggested involvement of the tracts which conduct these forms of sensation, that is, the left lateral spinothalamic tract. Since tactile stimuli ascend partly in the homolateral posterior column and partly in the opposite anterior spinothalamic tract, their preservation indicated that at least one of these pathways was intact. The left arm and leg, although they were normal in bulk, were paralyzed and spastic, and displayed increased tendon reflexes and extension of the great toe on plantar stimulation.

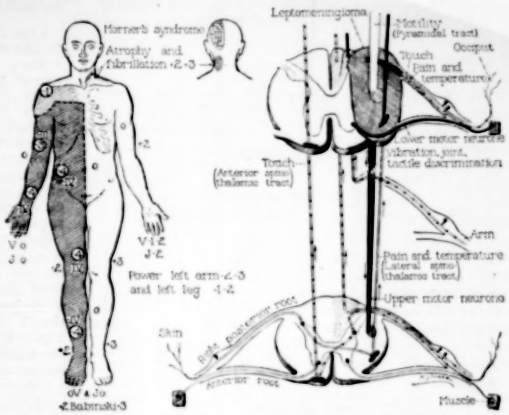

Fig. 4.—Illustrating data noted in case 1. In this figure and in figures 5 and 6 the intensity of changes is charted on a basis 0 to 4, 0 indicating normal, 4 complete absence. Arabic figures represent appreciation of touch; encircled Arabic figures, pain; Roman figures, temperature. Injured pathways in this figure and in figures 5 and 6 are in solid black. Extramedullary intradural tumor on the left side at first and second cervical segments.

This indicated injury to the left pyramidal tract. The faulty perception of movements of the joints and of vibration in the left upper extremity indicated that the lesions involved the lateral aspect of the left (fac. cuneatus) posterior column. In other words, Brown-Séquard's syndrome, which is indicative of a lesion affecting one side of the cord, was well developed. The drooping eyelid and small pupil on the left, Horner's syndrome, were due to paralysis of the sympathetic fibers and indicated a lesion not lower than the first or second thoracic segments, since no sympathetic fibers leave the cord above this level. The left sternomastoid, trapezius and nuchal muscles were weak, atrophied and fibrillating, which indicated involvement of lower motor neurons. Since these muscles are all innervated by cells of the first four cervical segments on the same side, a sharp localization became possible. Over the left occipital region in the territory of the posterior root fibers of the second cervical nerve, appreciation not only of pain and temperature but also of touch was lost. These phenomena localized the lesion sharply to the left side, in the region of the first and second cervical segments. The projectile vomiting was probably caused by encroachment of the lesion on the foramen magnum. Since the history indicated progressive involvement, tumor was the most likely cause.

Subtotal removal of a malignant meningioma was followed by marked temporary improvement, but the growth recurred later.

Tumors in the upper end of the spinal canal may present certain peculiar features. The exposed situation of the decussating pyramidal tracts on the anterior aspect of the cord, in the presence of a tumor, may result in a quadriplegia unaccompanied by any sensory disturbance. The sensory disturbances associated with high cervical tumors may be limited to the lower extremities or may fluctuate from time to time and from place to place, probably because the canal is relatively

2. Craig, W. M.: Unpublished data.

large. Involvement of the descending root of the fifth nerve may result in pain referred to the face and in anesthesia for pain and temperature over certain districts of the face, particularly over the forehead. The proximity of the tumor to the foramen magnum may bring about signs of tumor of the brain, such as projectile vomiting and choked disks.

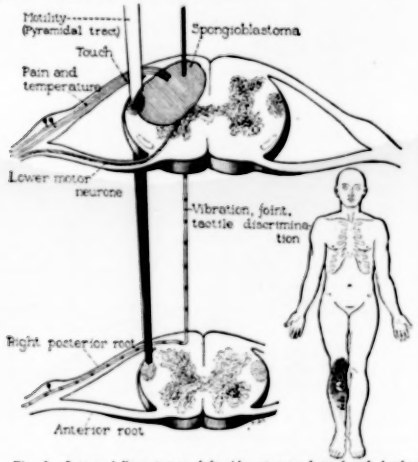

Fig. 5.—Intramedullary tumor, left side, at second to fourth lumbar segments.

Case 2.—A man, aged 58, came to the clinic because of pain in the right leg. Six years before, a "pinching" pain had appeared under the right knee cap when he sneezed. The pain had grown in intensity, had gradually extended to the anteromedian aspect of the right thigh, and had been especially severe at night. His wife had tried to relieve him by "ironing" the leg. The iron had been too hot for the thigh but he had "stood it well" on the knee. The following morning they had discovered large blisters over the knee. Numbness had developed in the right great toe and had gradually crept up the anterior aspect of the leg. For four years this leg had grown stiff and awkward, and he had stumbled frequently. Two years previously he had soiled himself during an attack of diarrhea.

Examination disclosed slight weakness of the right leg (fig. 5), particularly of the iliopsoas, hamstring and extensor muscles of the toes, and occasional fibrillary tremors in most of the visible muscles of this limb. The gait was slightly spastic and ataxic on the right side. The right patellar reflex was absent, a good localizing sign, but the right achilles tendon reflex was more active than the left, and the right great toe turned up on plantar stimulation. Evidently the lesion involved the second to the fourth lumbar segments, which subserve the arc of patellar reflex, and the right pyramidal tract. There was impairment of all forms of cutaneous sensibility mediated through the posterior roots of the right third and fourth lumbar nerves, and of vibration, joint and tactile discrimination, below this level, mediated through the homolateral posterior column; for example, when the patient was asked to place a finger on a point previously touched by the examiner, he missed it by 16 cm.; when asked to count the number of rapidly applied stimuli, he did so inaccurately; he could not recognize figures drawn on the skin; he could not recognize two points of a compass, applied simultaneously to an area, unless they were separated more than 6 cm. However, a separation of 2.2 cm. sufficed over the corresponding area on the left leg.

A diagnosis was made of tumor of the cord, probably extramedullary, at the level of the third and fourth lumbar segments, which lie opposite the body of the eleventh thoracic vertebra on the right side. On exploration a poorly defined intramedullary spongioblastoma was found, evidently situated more on the right side of the cord than on the left.

The case illustrates, among other things, the difficulty of distinguishing between intramedullary and extramedullary growths.

Case 3.—A man, aged 29, came to the clinic because of "sciatic neuritis." Three years before, on a morning following a dance, he had been unable to get out of bed because of general malaise, fever, and intense pain in the lumbosacral region, which radiated down the posterior aspect of the left thigh. For nine days he had remained helpless in his shack and had "almost frozen to death," for the temperature had dropped to —36 F. After three weeks he had returned to work but the pain had persisted. Work had aggravated the pain but he could "tell when the sun set and rose" because of the nocturnal incidence of the pain. Two months before examination, he had noticed a crawling sensation over the posterior aspect of the left thigh.

Many features of the story suggested sciatic neuritis, but other possibilities were indicated. There was a marked list of the spine toward the right. Flexion of the extended leg on the thigh (Lasègue's test) increased the pain, as did sharp flexion of the head on the thorax. The left achilles tendon reflex was absent. Appreciation of pain, temperature and touch were impaired, as indicated in figure 6. The spinous processes of the second and third lumbar vertebrae were slightly tender, but the sciatic nerve was not tender.

Influenced by the course of the illness and the site of the anesthesia, a diagnosis was made of tumor of the cauda equina

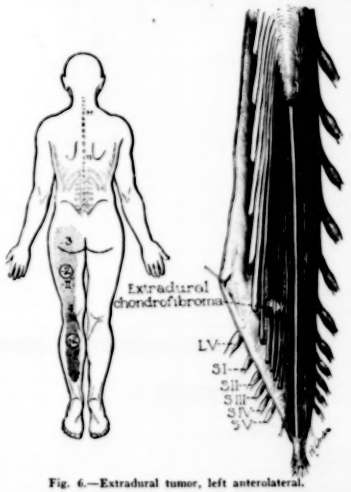

Fig. 6.—Extradural tumor, left anterolateral.

with involvement of the left second, third and fourth sacral roots. The exact level was difficult to determine, since the tumor might be situated anywhere between the body of the first lumbar vertebra, at which level these roots spring from the cord, and the sacral foramina, where these roots leave the spinal canal.

Laminectomy was performed and a spherical chondrofibroma was found, anterior to the dura, to the left of the median line, arising from the fifth lumbar intervertebral disk and obstructing two thirds of the lumen of the spinal canal.

In tumors in the lower end of the spinal canal, the long intraspinal course of the lumbar and sacral nerves makes it extremely difficult to determine the exact level of the disturbance and whether there is a tumor of the cord, of the cauda, or of the sacrum. The neurologic data may be the same in all cases.

The data obtained by spinal puncture, roentgenologic examination, and rectal examination usually obviate serious blunders.

HYDROSTATIC AND CHEMICAL CHANGES OF THE SPINAL FLUID

On the basis of experimental evidence, Sachs [3] concluded that the spinal fluid is practically without circulation. The slightest change in pressure at any situation is, however, transmitted throughout the remainder of the fluid. Because of the limited space in the spinal canal, a growing tumor eventually interrupts the continuity of the fluid in the subarachnoid space. Such blocking may in most cases be demonstrated by a simple maneuver described by Queckenstedt [4] in 1916. We are indebted, particularly to Ayer,[5] Stookey,[6] Elsberg [7] and Davis and Pollock [8] for contributions of far-reaching clinical importance.

When the spinal puncture needle and the attached manometer are in place, pressure on the jugular veins normally causes a rise in the column of fluid in the manometer, owing to filling of the intracranial venous channels, with consequent displacement of cerebrospinal fluid along the spinal subarachnoid space, through the needle, into the manometer. Release of the pressure on the veins results in prompt fall of the column of fluid in the manometer, owing to a return to previous hydrostatic conditions. When the pathway of the fluid in the canal is obstructed by a tumor, the degree of interference is registered by the column of fluid in the manometer. Should the tumor lie low in the canal, the needle may pierce the tumor and a dry tap result, or the needle may enter the canal above the tumor. When this occurs, block may sometimes be demonstrated by injecting a saline solution into the epidural space by way of the sacral hiatus, and noting the result produced in the manometer.

The fluid obtained from the canal below a tumor is often yellow. The fluid may also be yellow above the tumor, but the color here is usually lighter than below. The content of globulin in the fluid is almost invariably increased. The total content of protein in the fluid in cases of tumor is usually high, whereas that of fluid loculated by adhesions, in which a block may also exist, usually approaches normal. The removal of 7 cc. of fluid normally results in lowering the basal pressure of fluid about half; when the fluid is loculated, the fall in pressure is usually great.

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ROENTGENOGRAPHY

Roentgenography occasionally reveals erosion of bone produced by a tumor, or even a calcified tumor itself. Roentgenography is also one of the most certain methods of excluding metastatic tumors and other diseases of bone. The introduction of an opaque medium, such as iodized oils, into the subarachnoid space through cisternal or lumbar puncture usually does not help a difficult situation. When the block due to tumor is sufficiently complete to arrest the oil in its descent, the situation of the tumor usually can be determined without its use; when block is not so complete, the oil may sometimes be seen by aid of the fluoroscope to deviate from its course. Its use in differential diagnosis is limited, and iodized poppy-seed oil 40 per cent, which is the preparation commonly used, is somewhat irritating to the meninges.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis may be difficult. Various inflammatory (suppurative, nonsuppurative, parasitic, granulomatous) malignant and post-traumatic involvements of the cord, membranes, roots, and spinal column come into question, as do degenerative diseases of the cord. Multiple sclerosis deserves special mention, since it may be suggestive of a transverse lesion of the cord and since tumors high in the vertebral canal may simulate multiple sclerosis. Syringomyelia may be difficult to distinguish from intramedullary tumor, and the two may be present in the same case. The spinal cord and roots may be compressed in hypertrophic osteitis and hypertrophic arthritis of the spinal column and in Paget's disease. Spina bifida occulta may be associated with traction and compression bands that lead to progressive paralysis and even with tumor. Spondylolisthesis, or slipping forward of one vertebra on the other, usually the fifth lumbar on the sacrum, may be detected without difficulty by means of roentgenography.

The occasional loss of the patellar reflexes in cases of tumor sometimes leads to the erroneous diagnosis of tabes. Root pains cause the greatest confusion, particularly when disease of the gallbladder, or of the genito-urinary or gastro-intestinal tracts, is associated with tumor of the cord. Retroperitoneal and mediastinal tumors, particularly aneurysms, and leukemic and lymphoblastomatous infiltrations of the cord, provide pitfalls when short-cuts in the examination are attempted. Sometimes edema of the lower extremities is so prominent a feature that cardiac or renal insufficiency is diagnosed.

Repeated examinations may be necessary in order to establish a diagnosis. Occasionally exploratory laminectomy is advisable, particularly if progressive involvement of the cord makes further delay perilous. However, exploration without definite indication of the correct level of disturbance is almost certain to result in disappointment.

ABSTRACT OF DISCUSSION

DR. J. B. AYER, Boston: I have investigated sixty-four cases of tumor involving the spinal cord. These cases of primary tumors give the following figures as to the appearance of symptoms: In eighteen cases of intramedullary tumors, mostly glioma, twenty-six months elapsed before an operation was undertaken, on the average. In thirty-three cases of meningioma, that is, extramedullary tumor arising from arachnoid or from nerve root, twenty-four months elapsed. In four cases of epidural tumor, eight months on the average

elapsed before operation. And in nine cases of tumor arising from the intervertebral disk, that is, chondromas, thirty months elapsed. These figures agree closely with the figures Dr. Woltman has given as his average. It is not too satisfactory that these patients should have gone so long when on looking back over the records one can detect symptoms that were highly suggestive and signs which Dr. Woltman has given that were quite characteristic. I will plead guilty to postponing operation on two of these patients. With regard to the symptoms and the signs as given by Dr. Woltman, I can only say that I agree in every way. Pains are usually the earliest symptoms in most cases, in thirty-seven of my series; they are often localizing in value. Atrophy and atrophic paralysis are localizing signs of great value: in four cases of my series and in one case the only real localizing point on which operation was based. The sensory level is a point to be sought for and frequently is not found. In fifteen of my sixty-four cases a satisfactory sensory level could not be made out. In this group of fifteen cases, and in others in which confirmation is desired, one must turn to other diagnostic aids, and I refer particularly to the use of iodized oil for that purpose. I have used iodized oil in twenty-six of the sixty-four cases. I have had only temporary ill effects from its use. In three cases it was not helpful, as far as my interpretation was concerned. In two the level appeared incorrect and in one the iodized oil passed by a tumor. But that may have been due to technic. I always use the fluid estimation of block, as Dr. Woltman has outlined, and believe it to be a delicate method of determining whether or not there is cord compression. Iodized oil should be used in connection with this if the level is indefinite.

DR. C. H. FRAZIER, Philadelphia: There is a striking difference between brain and spinal cord tumors. In the latter, difficulties arise chiefly in differentiating tumor from other lesions, whereas in brain tumors the difficulty lies chiefly in localization. Generally, recognition of spinal cord tumors is not difficult, but there are notable exceptions. I feel that more is learned from failures than from accomplished successes. I therefore reviewed some cases in which at operation I failed to find tumor and was struck particularly by the fact that in none was there a typical history of spinal cord tumor. In most cases the tumor is extramedullary; there is a definite sequence of symptoms, of pain, paresthesia and paralysis, although Dr. Woltman places the motor phenomena before the sensory. I was glad he and Dr. Ayer stressed pain as a conspicuous phase. To me this is an especially informing guide to diagnosis and to localization; usually the first symptom to appear referred from the onset to a constant zone and, while the pain zone may spread with tumor growth and involvement of more roots, the patient always complains of pain at the point at which he first experienced it. Theoretically, there are three cycles in the spinal cord history: the pain or root cycle, the Brown-Séquard cycle and the transverse cycle. Most of the mistakes in my series have been in cases of multiple sclerosis, when many of the typical symptoms are absent and the differentiation is not easy. But I have found that there are several important differentiating points. In multiple sclerosis the history is longer, the progress of the disease is slower. There is no definite sensory level and there are marked remissions not present in tumor of the spinal cord. Mistakes ought not to be made in cases of syphilitic lesions. Patients who suffer most from failure to recognize the source of pain are those with metastatic carcinoma of the spine, prolonged, intolerable, intractable pain, unrelieved by morphine. Finally, syringomyelia may occasionally be mistaken for intermedullary tumor but the presence of syringomyelia does not necessarily exclude the propriety of a laminectomy. Only recently I had the most gratifying results from exposing and draining a large cyst of a cervical cord. There will always be cases in which there is justification for operating in the presence of a reasonable doubt. The surgeon is often faced with a difficult situation when confronted with a case which does not run true to form, but failing to find a tumor at operation there usually are three distinctive features: the patient did not have a typical tumor history, he did not have the characteristic pain phenomena, and he did not have a definite, unmistakable sensory level.

DR. LOYAL DAVIS, Chicago: There is a tendency for every one to attempt to find a group of symptoms that always mean spinal cord tumor rather than to arrive at a diagnosis of a lesion of certain tracts or cells within the spinal cord at a given level. Such a diagnosis may be made with a complete disregard for the actual nature of the lesion. For example, loss of the deep tendon reflexes, flaccid paralysis, muscular atrophy, and a reaction of degeneration mean the presence of a lower motor neuron lesion. There can be only three sites for such a lesion, and those are the peripheral nerve, anterior roots and anterior horn cells of the spinal cord. The absence of loss of sensation will rule out a peripheral nerve lesion. Anterior root lesions are so rare that they may be disregarded practically. The anterior horn cells are left. This is a horizontal diagnosis and the muscles involved will afford the vertical or segmental level diagnosis. Because a spinal cord tumor requires differentiation from every degenerative disease of the spinal cord, other diagnostic methods may be used to enable one to state definitely before operation that a tumor is present. He has mentioned manometric studies, which includes the Queckenstedt test. Certainly a spinal puncture should never be done for diagnostic purposes unless complete manometric readings are made. The demonstration of the presence of a subarachnoid space block is of extreme importance. The study of the protein content of the fluid above and below a tumor even though a partial block is present is often the deciding diagnostic factor. Dr. Woltman's experience with the injection of iodized oil into the subarachnoid space as an aid in the diagnosis of a tumor is similar to mine. It is a diagnostic procedure that is accompanied by danger and one that is unnecessary. It is well known that if water is poured into a number of connected tubes the surfaces of the liquid will lie in the same plane in each of the tubes. If one of the tubes is sealed at a given level, the introduction of fluid into the tubes will be followed by an increased rise of the fluid level in the unsealed tube. It is not even necessary to deal with rigid tubes. One of them may not be rigid and this fact will still be true. The spinal dural sac lends itself to a study of this hydrodynamic principle. After a lumbar puncture on the patient in the sitting position, the needle is connected in a fluid circuit with a syringe and buret. A given amount of saline solution may then be introduced successively into the dural sac. Each rise of fluid in the buret is recorded. It has been shown that there is an immediate multiplication of the rise in the buret as soon as the block in the subarachnoid space is reached. The amount of each injection of fluid has, of course, remained constant. This level on the buret is measured on the patient's back above the site of the puncture. I have been able to verify the clinical localization beneath a given spinous process in several instances at operation.

Energy and Metabolism.—The sum total of energy remains constant in the universe, but energy may vary in kind. The source of energy on the earth is the sun, excepting the energy of the tides, which is due principally to the moon. The sun unevenly warms the atmosphere, producing winds which drive ships and windmills. The sun's heat lifts the vapor of water into the atmosphere, producing rain, in consequence of which rivers are made to turn machinery. The sunlight acts upon a mixture of hydrogen and chlorine gas, causing them to unite with a loud explosion, and the sun acts upon the green leaf of the plant, causing it to unite carbon dioxide and water, with the production of formic aldehyde, which is built up into sugar, oxygen being given off in the process. The sun's energy required to build up the compound becomes latent or potential in it. Whenever and wherever this sugar is again converted into carbon dioxide and water by oxidation, exactly the same quantity of energy taken from the sun and made potential in the sugar is set free. This sugar in the plant may be further converted into starch, cellulose, fat, and possibly into protein. Plants furnish wood and coal as fuel for the steam-engine. They also furnish the basis of animal food yielding substances which can build up animal tissues, and which can furnish the energy necessary to maintain those motions in the cells whose aggregate is called life.—Lusk, Graham: The Elements of the Science of Nutrition, Philadelphia, W. B. Saunders Company, 1928.

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INTRAVENOUS UROGRAPHY BY MEANS OF THE SODIUM SALT OF 5-IODO-2-PYRIDON-N-ACETIC ACID *

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NEW YORK

In 1923 Rowntree and his co-workers [1] of the Mayo Clinic were the first to attempt to visualize the urinary tract by means of the intravenous injection of a 10 per cent solution of sodium iodide and also by the oral administration of that salt. The urinary bladder, and in some cases the pelvis and ureter, could be visualized.

The following year Rosenstein and von Lichtenberg [2] reported at the urologic congress in Berlin their results, repeating the work of Rowntree and his co-workers with sodium iodide but in conjunction with perirenal pneumoradiography.

In the same year Volkmann [3] reported his observations with the use of different halogen compounds; he found the intravenous injection of a 10 per cent solution of sodium iodide to be best.

In 1927 Lenarduzzi and Pecco,[4] tying off the ureter and injecting sodium iodide intravenously in animals, obtained positive roentgenograms of the kidney, pelvis and ureter.

Hryntschak [5] at the urologic congress in Berlin in 1928 and in a publication in 1929 [6] reported his results with the use of a large series of bromine and iodine compounds, aromatic in nature, carrying out about 200 animal experiments. Neither the names nor the chemical formulas of the substances used by him are stated. In his publication the only detail of the chemical composition of three of them applied and numbered 13, 27 and 48 is that the first two were iodine and the last a bromine compound. In some of his experiments he simultaneously used an adjuvant, such as caffeine, urea, pituitary extract and atropine, to influence excretion and the dynamics of the pelvis and ureter. He obtained some positive results in animals and in a female patient. In his conclusions he stated that although, two and a half years ago, he had been able to obtain useful intravenous pyelograms in a few cases, the method had by no means met the conditions set forth by him. He, however, expressed the hope of accomplishing his aims by continued investigations.

Ziegler and Köhler [7] reported at the urologic congress in Munich in 1929 and in a publication in 1930 [8] their results with the oral administration of 10 Gm. of sodium iodide and 10 Gm. of urea in milk in conjunction with pressure applied over the sacro-iliac articulation through the abdominal wall by means of a special apparatus.

Roseno [9] was the first to achieve practical results by means of the intravenous use of a combination of sodium iodide and urea, called "Pyelognost" [NaI, $CO(NH_2)_2$]. According to some reports it is stated that the substance employed by him is at times associated with reactions. The visualization of the urinary tract, however, is satisfactorily accomplished. Roseno also stressed the functional aspects of the problem. He gave an account of his investigations at the urologic congress in 1928. In 1929 he made a further presentation of his work before the urologic congress in Munich and published an extensive report of the method and the results. In the course of a discussion at the time of the first presentation, von Lichtenberg [10] expressed himself pessimistically concerning the possibility of intravenous urography.

Fig. 2.—Intravenous urogram to exclude right urinary calculus, in a girl, aged 8 years. Slight dilatation of right kidney pelvis and blunting of calices (pyelitis). .25 Gm. of substance.

This work [11] was begun with N-methyl-5-iodo-2-pyridon, synthesized by Professors Binz and Räth.

At the wish of Professor Binz, the efficacy of this substance in the therapeusis of streptococcus infections

* Read before the Section on Urology at the Eighty-First Annual Session of the American Medical Association, Detroit, June 27, 1930.
* Owing to lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.
* This work was carried out with the aid of a grant from the Emanuel Libman Fellowship Fund. It was initiated at the Staedtisches Krankenhaus, Altona, Germany (Prof. Dr. Leopold Lichtwitz, director), continued in the urologic service of the St. Hedwig Krankenhaus, Berlin (Prof. Dr. Alexander von Lichtenberg, director), and has since been pursued in the urologic service of Dr. Beer, the radiologic department of Dr. Jaches, and the Chemical Laboratories of the Mount Sinai Hospital, New York.

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was under investigation in the clinic of Professor Lichtwitz in Altona, Germany. The study of its excretion through the kidney and into the bile and its iodine content (54 per cent) led to the thought that the substance might be applicable for roentgenologic purposes. Experiments on rabbits demonstrated the fact that the kidney parenchyma and urinary bladder could be visualized after the intravenous injection of the drug; the pelvis and ureter, on the other hand, were poorly seen. Ligation of the latter, however, did bring the upper tract well into view. The gallbladder was not visualized. Simultaneous studies of its excretion, limited to determinations of the iodine component, revealed about 75 to 80 per cent of the injected iodine in the urine in from twelve to sixteen hours.

Concerning the toxicity and tolerance, I found that 0.2 Gm. per kilogram of body weight could be administered intravenously to the rabbit without any demonstrable ill effects; 0.33 Gm. per kilogram, however, produced transient generalized disturbances. On the basis of these observations, one could theoretically give to a 60 kilogram individual 18 Gm. of the substance as a maximal dose. Because of marked individual differences in man, the quantity administered was far below

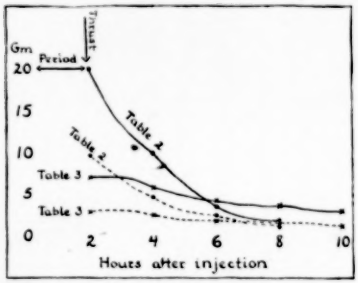


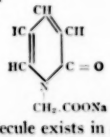
Fig. 3.—Excretion of normal and of abnormal kidneys, 50 Gm. dose, tables 2 and 3: solid line, weight of precipitable acid excreted, in grams; broken line, weight of iodine excreted.

the calculated one. The adult received 6 Gm. of substance. Headache, nausea, vomiting, generalized discomfort, and in two cases transient diplopia were disturbing factors. The oral and rectal administration of this drug also yielded similar roentgenologic results and toxic manifestations. In all cases the urinary bladder was seen. The kidney parenchyma itself appeared to stand out more in relief. In man, the upper urinary tract was outlined only after producing a temporary artificial obstruction in the ureter by means of a bougie at the time of maximal excretion. The attained results, though not sufficiently good for practical purposes, were encouraging and pointed to the possibilities of further development.

The experience with this substance brought out the need for a modification, possessing better tolerance and greater solubility, so that a larger dose could be administered. In this way, a higher concentration of the excreted iodine component could be hoped for. The observation of double vision and the possibility that the methyl radical might be responsible were noted. At a conference between Professor Binz and his associates, Professor Lichtwitz and me, these results and observations were presented. Professor Binz, who followed these investigations with great interest, said that he felt that these needs could be fulfilled. He supplied us with several compounds which he states belonged to the selectan group, synthesized by him and Professor Räth at an earlier date, and which now were prepared in larger amounts for our purpose and studies with the aid of Dr. Hillgruber.[12] One of them, insoluble in water, was soluble in very strong alkali. It could not be given intravenously and was therefore administered by mouth to a dog and in gelatinum duratum capsules to a male patient at Professor Lichtwitz's clinic with negative results. Professor Binz had furnished me with this drug one week before the conference mentioned.

Thereafter I continued the work in the urologic service of Professor von Lichtenberg in Berlin. To eight patients, 7.5 Gm. of the original substance, N-methyi-5-iodo-2-pyridon, were given by mouth with the already described reactions. The outline of the bladder was seen. Only in one case, that of a stone obstruction of the ureter about one inch below the ureteropelvic junction, was a useful roentgenogram of the pelvis and ureter above the stone obtained. The insoluble compound used at Professor Lichtwitz's clinic was now tried again at Professor von Lichtenberg's division with the same negative results. Another compound of this group, having a higher iodine content and a sodium acetate radical substituted for the methyl, was then tried. Though more soluble than the previous one, it was still unsuitable for intravenous application. The oral administration was likewise inadequate because of the poor absorption by the gastro-intestinal tract. When a preparation having a lower iodine content and the sodium acetate group substituted for the methyl was furnished by Professor Binz, the clinically applicable and successful substance, 5-iodo-2-pyridon-N-acetate of sodium, was finally obtained. This compound differs from the original only in the substitution of sodium acetate in place of the methyl group. It was fortunate that this preparation, introduced abroad as "Uroselectan," proved to be free from all accompanying reactions, to have quite an extraordinary affinity for the kidney, and to be very soluble in water. These needs were therefore completely fulfilled and satisfactory roentgenograms could now be obtained, as reported by me at the urologic congress in Munich in 1929.[11] Professor von Lichtenberg, who took up the subject directly after me, stated that he considered that which had been communicated a significant advance.[13] Some weeks later, my paper was published in the *Klinische Wochenschrift* and was followed by another contributed by Professor von Lichtenberg and me.[14]

The 5-iodo-2-pyridon-N-acetate of sodium (42.2 per cent iodine) is nontoxic, very soluble in water and neutral in its reaction.



The iodine in the molecule exists in a stable organically bound state. Neither in the injected solution nor in its excreted form is iodine present in ionized state. These

12. Medizinische Mitteilungen, Schering-Kahlbaum, February, 1930.
13. Von Lichtenberg, Alexander: Klinische Prüfung des Uroselectans, Verhandl. d. deutsch. Gesellsch. f. Urol., IX Kongress, Munich **9**: 332-336, 1929.
14. Von Lichtenberg, Alexander; and Swick, Moses: Klinische Prüfung des Uroselectans, Klin. Wchnschr. **8**: 2089-2091 (Nov.) 1929.

facts, despite the relatively large quantity of iodine in the amount of this substance that can be administered with impunity, would seem to explain, at least empirically, why iodism has never been observed. The tolerance for this compound is exceedingly great. A rabbit would receive 3 Gm. per kilogram of body weight without any harm. With the latter dose as a basis of

TABLE 2.—*Quantitative Determination of Urine Specimen* *

Urine Specimen	Volume, Cc.	Specific Gravity	Weight of Precipitated Substance, Gm.	Iodine Calculated from Substance, Gm.	Iodine Determination of Urine
2 hours	850	1.014	19.79	9.004	9.6295
2 hours	200	1.034	9.295	4.275	4.56
2 hours	120	1.032	4.604	2.095	2.4578
2 hours	91	1.024	1.792	0.8154	1.0206
2 hours	93	1.014	No precipitate		
2 hours	130	1.008	No precipitate		
Total grams			35.581		17.889
Percentage of substance excretion					91.23 per cent
Percentage of iodine excretion					95 per cent

* A woman, 25, with good renal function; 50 Gm. of substance injected.

calculation, it follows that 180 Gm. of the substance, or, in terms of iodine, 75.6 Gm., can be theoretically administered to a 60 kilogram person. The substance is excreted as such through the urinary tract, being recovered from the urine as the light yellow, insoluble acid on the addition of a dilute mineral acid. Because of the relative simplicity and accuracy and because I found it to be of assistance in the evaluation of the roentgenologic results, it has been considered feasible to apply a quantitative determination of this insoluble, precipitated acid-form as a basis for a test of renal function.

The recovery and identification of the excreted substance have been established in the following manner:

The addition of a dilute mineral acid—HCl or H_2SO_4—to urine containing the excreted soluble salt of the 5-iodo-2-pyridon-N-acetic acid results in the precipitation of the insoluble acid form. The precipitating agent should be added gradually until no more precipitation occurs. After one hour's settling, the insoluble acid is

TABLE 3.—*Quantitative Analysis of Urine Specimen in a Case Presenting Poor Function* *

Urine Specimen	Volume, Cc.	Specific Gravity	Weight of Precipitated Substance, Gm.	Iodine Calculated from Substance, Gm.	Iodine Determination of Urine, Gm.
2 hours	235	1.019	6.70	3.05	3.12
2 hours	260	1.022	6.10	2.78	2.84
2 hours	145	1.025	3.86	1.76	1.82
2 hours	160	1.025	3.56	1.62	1.79
2 hours	158	1.022	2.71	1.23	1.26
Total grams			22.93		10.83
Percentage of substance excretion					53 per cent
Percentage of iodine excretion					52 per cent

* A woman, aged 42; 55.5 Gm. of substance injected.

filtered by means of suction on a Buchner funnel and is washed free from the precipitating agent with distilled water, as determined by the silver nitrate test for hydrochloric acid or the barium chloride test for sulphuric acid. The residue is dried to a constant weight at 80 C. For identification, a variety of samples of the urinary precipitate were analyzed for their iodine and nitrogen content; their acid equivalents and melting points were also determined. These were simultaneously controlled by comparison with similar determinations on substance precipitated from clean manufacturer's samples of the sodium salt.

The brown color of the precipitate, recovered from some of the urines, is believed to be due to the admixture of urinary pigment; this is demonstrated as follows:

1. If animal charcoal is added to boiling water containing the brown colored acid-form in solution, the recrystallized substance no longer is brown; it now is light yellow, resembling pure precipitate.

2. Conversely, when a manufacturer's sample of the solution of a sodium salt is added to normal urine and then the acid form precipitated from it (a procedure analogous to that of the recovery of the substance from the urine), the precipitate obtained is then brown. The same pure solution, however, with the addition of acid alone, yields a light yellow precipitate.

Fig. 5.—Marked dilatation of ureter, kidney pelvis and calices in a boy, aged 10 years. 25 Gm. of substance. (Case of Drs. Leopold and Stewart of the Lenox Hill Hospital, New York.

3. Qualitative analysis of the precipitate, following the scheme for the examination of urinary calculi, is negative for nonpigmentary urinary constituents.

The next consideration is whether the precipitation is quantitative. To determine this, two hour urine specimens of patients injected with a known amount of the sodium salt were collected. On each specimen two simultaneous determinations were made, one for its iodine content by a sodium carbonate and sodium nitrate fusion method; the other by precipitating the acid and determining its constant weight. Since the acid by molecular weight contains 45.5 per cent of iodine, the quantity of iodine found by multiplying the weight of the precipitated acid by 45.5 should correspond to that of the total iodine determined directly from the urine. Tables 2 and 3 illustrate the results obtained.

Comparing columns five and six, that is, the calculated iodine values with the independent iodine determinations, one observes a constant, close agreement. The reason for the relatively small differences between the calculated (the lower values in column 5) and the quantitatively determined iodine (column 6) can be explained by the presence of the precipitated acid form in the filtrate as a result of its slight solubility. It has been found that the iodine content of the filtrate plus the calculated iodine compare very favorably with that of the quantitatively determined iodine. There were isolated cases in which there were discrepancies, believed, however, to be due to an error in the technic of iodine determination. This phase is being investigated further.

Fig. 6.—Same patient as in figure 5, with bladder partially empty, now demonstrating stricture (congenital) ureterovesical junction with marked dilatation of lower part of ureter, which was hidden on previous film by distended bladder. (Case of Drs. Leopold and Stewart of the Lenox Hill Hospital, New York.)

Finally, in order to establish the percentage excretion of the iodine and of the precipitated acid, it is necessary to determine the actual amount of injected salt in terms of the iodine component, and also in terms of the precipitated acid. It is obvious that, in the preparation of the solution, losses will occur. The following are the factors and sources of error which should be considered:

1. Apothecary scale used—about 2 per cent.
2. Loss due to the moisture content of the salt—about 3 per cent.
3. Loss through double filtration of the solution—about 3 per cent.
4. An indeterminate loss due to the impossibility of a quantitative transfer of the 40 per cent solution from the glassware used in its preparation.
5. The difference in molecular weight of the sodium salt (301) and the precipitated acid (279), 7 per cent.
6. Loss due to the solubility of the precipitated acid, a fraction of 1 per cent.

Thus, to establish the extent of inaccuracy in the quantity of iodine actually administered as against its theoretical content, a solution as for injection was prepared. Its actual iodine content, determined chemically, was found to be on the average 89 per cent of the theoretical. This figure can be designated as "the iodine factor."

The method for establishing the "precipitated acid factor" was similar to the foregoing except that the prepared solution was then distributed among normal urines so that each two hour specimen resembled approximately in its volume and substance content those excreted by patients injected with different amounts of the solution of the sodium salt. (In carrying out the renal function test by means of the quantitative estimation of the excreted substance, five or six two-hour urine specimens are collected.) Table 4 demonstrates the average established factor; namely, from 77 to 78 per cent.

TABLE 4.—*Corrected Acid Substance: Factor for Calculating Percentage of Excretion*

	Druggist Scale	Chemical Scale	Per Cent of Loss
1.	40 Gm. of substance.....	29.525 Gm.	(—) 1.19 %
2.	Drying.....	38.2 Gm.	(—) 3.35 %
3.	Solution of 100 cc. filtration..... (Loss on filter paper = 1.125 Gm.)	.....	(—) 2.95 %

4. Aliquot for iodine determination, 4 cc. of total 96 cc.
5. Distribution on basis of average urinary output by volume and by weight

Specimen	Volume, Cc.	Containing Approximately	Gm. Precipitated Acid Recovered
A. 2 hrs.	550	1:2 solution precipitated and filtered	16.95
B. 2 hrs.	175	1:4 solution precipitated and filtered	8.19
C. 2 hrs.	150	1:10 solution precipitated and filtered	3.545
D. 2 hrs.	70	1:20 solution precipitated and filtered	1.355
			29.850
Aliquot 4 cc.			1.24
			31.090

Acid substance factor (apothecary scale), $\frac{31.09}{40.0} = 77.7\%$

Acid substance factor (chemical scale), $\frac{31.09}{29.525} = 78.66\%$

This factor is variable within narrow limits depending on points enumerated

In other words, to establish the basic acid value, 22 per cent is to be deducted from the theoretically administered weight of sodium salt when calculating the percentage of excretion in terms of acid substance. Similarly, 11 per cent is to be deducted from the theoretical iodine content of the injected sodium salt in order to estimate the percentage excretion in terms of the iodine component.

These aspects being clarified, it now becomes evident that quantitative determinations of the excreted substance in terms of the precipitated acid can form the basis of a test for renal function. (The quantitative estimation of the precipitated acid has been chosen in preference to that of the iodine because of its relative simplicity and reliability.) Normally about 85 to 95 per cent of the substance can be recovered from the urine within from eight to twelve hours after the injection. In two cases 98 per cent was recovered. From that period on, under normal conditions, as a result of the solubility of the precipitate, which during this stage occurs in such small amounts, its presence can be detected only by an iodine determination method. It is

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thus found that the excretion of very small amounts of the substance goes on from three to ten and perhaps more days after the injection. For example:

First twenty-four hours, 850 cc., 0.3195 Gm. of iodine.
Second twenty-four hours, 1,200 cc., 0.0218 Gm. of iodine.
Third twenty-four hours, 1,400 cc., 0.0036 Gm. of iodine.
Fourth twenty-four hours, 1,400 cc., none.

From the results already obtained, it is seen that the normally functioning kidney possesses the ability to excrete this substance in a relatively large quantity within a given short period. This may be characterized as "the thrust excretion ability of the normally functioning kidney," present during the first two hours. To illustrate, from about 45 to 65 per cent of the total precipitable acid is recovered during the first two hours, about 20 to 33 per cent during the next two, and the remainder during the subsequent hours. Figure 3 illustrates the curves of excretion in a normally functioning and in a poorly functioning kidney.

Aside from the dose administered and the extrarenal factors influencing renal secretion, the thrust excretion ability of the normally functioning kidney plays a vital rôle in determining good roentgenologic visualization. During the later periods, in spite of the fact that the substance is still being excreted, poor or no visualization is obtained. Good visualization is dependent on a definite concentration of the shadow-producing element determined by the factors enumerated. When the additional mechanism of obstruction is present, visualization may be had although the normal height of excretion is absent, provided excretion takes place. On the other hand, under the same circumstances but with normal excretion, intensification of the shadow results. Thus, in a general way, it may be said that visualization, poor visualization, or no visualization is dependent on the functional activity of the kidney, in other words, its concentrating ability, as well as on extrarenal factors.

However, of the 122 cases studied at the Mount Sinai Hospital, one unexplainable exception has been noted. A woman, aged 54, with pain in the back and left kidney region, had an intravenous urogram done, June 2, 1930. Visualization was absent on the right side in all plates. The left urinary tract appeared normal. A large shadow of what looked like kidney was seen in the right upper quadrant. A faint curvilinear shadow in the bony pelvis on the right side was also observed (ureter?). June 4, cystoscopy and a right retrograde pyelogram revealed normal indigo carmine from both sides as well as the presence of a right sacral kidney. In order to gain an insight into this discrepancy, another intravenous urogram was repeated about two and one-half weeks later. The right kidney pelvis again was not visualized though the ureter could be definitely seen. This example serves to illustrate the need for caution in passing final judgment with absolute certainty on the functional state of the kidney by this method alone.

Moreover, it is also important to bear in mind that the functional activity of the kidney may be temporarily or permanently inhibited, and that the mere nonvisualization at a given examination does not necessarily signify permanent renal damage. The following case is illustrative:

Cystoscopic examination of a man, aged 41, was done, and a left retrograde pyelogram was made. At that examination normal indigo carmine excretion from both ureters was observed. The left pyelogram was normal. Following this examination, hematuria and marked pain in the left loin set in and persisted for about one week. When both symptoms had subsided, intravenous urography was done. Absent visualization of the pelvis and ureter with good kidney outline on the left side and a double pelvis and forked ureter on the right were noted. However, another intravenous urographic examination, about three months later, revealed a normally functioning and appearing left urinary tract in addition to the previous observations on the right; in other words, a case of temporary functional inhibition following retrograde pyelography.

Therefore, to evaluate intravenous urography and to interpret correctly the results obtained from it, it is of paramount importance to consider this method as an excretory one and to bear constantly in mind the processes occurring in the renal and extrarenal systems.

As an adjuvant in assisting one to interpret and to evaluate the radiologic results, it is felt that simultaneous determinations of the substance recovered in the urine as described are sometimes helpful. It is not assumed that this test is superior to other tests of renal function; but, in view of its relative simplicity and the fact that it forms part of the intravenous examination, its use is advocated solely as a confirmatory aid in the interpretation of the intravenous urogram.

Fig. 7.—Impassable stone obstruction, lower third of the left ureter, in a boy, aged 19. Intravenous urogram—good function—showing dilated ureter, pelvis and calices above stone. Right side normal. 50 Gm. of substance. Arrow points to stone.

The blood urea, phenolsulphonphthalein, the indigo carmine, and the dilution and concentration tests are of great assistance in establishing the contraindication to the application of this method in a given case of bilateral advanced kidney disease. Where the blood urea is high and the concentrating power of the kidney poor, the method yields few anatomic data and becomes not only superfluous but perhaps attended by danger. For information of renal function under such circumstances, more simple and less expensive means, such

as the blood urea and phenolsulphonphthalein determinations, serve the purpose.

In addition to anatomic data derived by this physiologic procedure, another vitally important phase of the urinary tract that can be studied without the introduction of instruments is the functional dynamic activity of the pelvis, ureter and bladder.

METHOD OF ADMINISTRATION

For an adult, the usual dose, 40 Gm. of substance, is added in small quantities to doubly distilled water, which has been previously warmed to a moderate degree so that the resultant volume is about 100 cc. Stirring aids the process of dissolving. The solution is filtered twice through ordinary filter paper into a 250 cc. clean

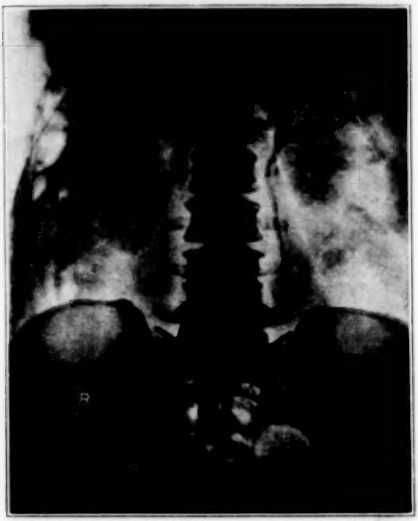

Fig. 9.—Intravenous urogram of a woman, aged 45, showing nonfunctioning sacculated right kidney, proved at operation to be a tuberculous pyonephrosis. Retrograde pyelogram impossible. Ureter could not be entered. Left side normal. 40 Gm. of substance.

Erlenmeyer flask, which is preferably stoppered with fresh wax paper. It is then sterilized in a water bath for half an hour or autoclaved at 15 pounds pressure for twenty-five minutes. The syringe method, in preference to that of the gravity, is chosen, in the feeling that it is more apt to avoid the possibility of a foreign body reaction. A sufficient number of record syringes plus injection needles is sterilized in distilled water. The injection is done in two or three stages at intervals of from three to five minutes. The first roentgenogram is usually taken about fifteen or twenty minutes after the last injection. The subsequent three plates are made about twenty-five minutes apart. When functional disturbances are present, it is advisable to have additional later plates, at approximately one to three hour intervals, taken to determine definitely the absence of visualization, or the presence of late visualization. Particularly in those cases in which there is the added factor of obstruction—ureteral stone, prostatic enlargement, or ureteral strictures—there may be a late, but good or poor type of visualization. Experience alone will guide one in the interpretation of the plates, as well as the number of plates that may be necessary.

An added factor of great importance which has improved the results as far as density, clarity and consistency of shadow are concerned has been the application of a moderate degree of compression by means of an air-inflated rubber balloon (basket ball bladder), maintained over the urinary bladder region for from five to ten minutes prior to and during the taking of each roentgenogram. It is also advisable to take one or two plates without compression several minutes after any of the preceding ones and to have the patient empty his bladder after the second or third plate.

From studies controlled on the same patient with different doses several days apart, the impression gathered is that the administration of a 50 to 60 Gm. dose of substance in 40 per cent concentration, given in divided portions at about a ten minute interval, yields denser and clearer roentgenograms. However, in view of the fact that this increased dosage means additional expense and that with a 40 Gm. dose sufficiently good practical results are usually obtained, particularly with compression, this change is at present advocated with some reserve. A 20 Gm. dose in adults has also given positive results.

The doses (40 per cent concentration) for children are as follows: 13 years of age, from 25 to 30 Gm.; 9 years and up, 25 Gm.; 6 years and up, 20 Gm.; 4 years and up, 16 Gm.; 2 years, 14 Gm.; 6 months, from 10 to 12 Gm.

REACTIONS

During the injection the patients experience transient thirst and generalized warmth, particularly involving the face and bladder regions. Nausea and vomiting of transient duration have occurred twice. Occasionally there is pain up the arm of injection, which, however, disappears shortly afterward. Paravenous infiltration produces pain but no necrosis. Thrombosis at the site of the injection has not been observed. The urine does not reveal any evidence of renal damage by the substance.

APPLICATION

The field of application of intravenous urography is evident whenever cystoscopy, ureteral catheterization or retrograde pyelography is dangerous or impossible for infectious or mechanical reasons, and whenever these procedures in general are indicated. The method, aside from offering a bilateral urogram, is also helpful in the presence of hematuria, in cases of implanted ureters, in children, and in individuals in whom instrumentation is taxing and harmful.

CONTRAINDICATIONS

Patients with uremia or latent uremia, as determined by the usual clinical methods, do not lend themselves to the application of this method. It is therefore wise to precede the examination by a determination of the blood urea. Experience with hyperthyroid patients is still wanting. The drug in cases of pulmonary tuberculosis does not seem to have any deleterious effect.

For pyeloscopic purposes this method will be feasible only when the density of the excreted substance is sufficiently great. When the function is poor, pyeloscopic results will be correspondingly deficient.

In my original paper published in the *Klinische Wochenschrift* in November, 1929, I [11] stated that the

iodine component could not be demonstrated in the circulating blood. In the report by Heckenbach [15] from von Lichtenberg's clinic, Tourné and Damm have shown this to be incorrect. Studies which I was making at the time confirmed their observations. I could detect its presence in the blood as late as ten hours after a 50 Gm. dose. The stools and sputum of the patients injected show the presence of the iodine component in relatively small amounts. In the stool this element could be detected in a bowel movement as late as three to four days. It is also of interest to note that the skin of rabbits injected intravenously with a solution of the substance contained the iodine component.

1 East One Hundredth Street.

INTRAVENOUS UROGRAPHY (SWICK METHOD) *

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The history of the development of this method as well as the chemical and pharmacologic properties of the substance employed are dealt with in greater detail in the paper by Dr. Swick presented before the Section on Urology.

Fig. 1.—Normal urogram of an adult; 60 Gm. of substance injected.

Swick states that the present substance, prepared by Professors Binz and Räth, is nontoxic, very soluble in water, neutral in reaction and under normal conditions excreted as such through the urinary tract within eight to twelve hours to the extent of from 85 to 95 per cent. Iodism has never been observed. Its tolerance is exceedingly great. From about 45 to 65 per cent of the substance is normally excreted during the first two hours. For this reason, the urograms show their greatest intensity during this period.

Fig. 2.—Normal urogram of patient, aged 13½ years; 30 Gm. of substance injected.

The technic of administration is as follows: A 40 per cent solution is made up in doubly distilled water to a volume of 100 cc., filtered and then sterilized. Injection is done by means of several record hand syringes into the veins of the arm. The quantity administered is, for an adult, from 40 to 60 Gm. of the substance in a 40 per cent concentration. Younger persons receive proportionate doses. For children aged from 6 to 9 months the dose is 10 or 12 Gm. of the substance; up to 2 years, 14 Gm.; 4 years and up, 16 Gm.; 7 years and up, 20 Gm.; from 10 to 13 years, 25 Gm., and 13 years old and up, 30 Gm. It was found roentgenologically that the injection in adults of from 50 to 60 Gm. of substance yields the better shadows. If 60 Gm. of substance is used, the full quantity of the solution may be injected continuously, or half is injected first and then the other half ten or fifteen minutes later. The shadows obtained then are nearly, though not quite, as dense as those by the retrograde or cystoscopic method. During the injection the patient has an evanescent sensation of thirst and warmth; occasionally in the injected arm pain is experienced during the injection. I have observed no other reaction.

The roentgen technic is that usually employed in urinary tract examinations: the Potter-Bucky diaphragm, a 14 by 17 film (occasionally a smaller size if only part of the tract is wanted), and compression by means of the rubber bag. The patient is kept on the

15. Heckenbach, W.: Funktionsuntersuchungen bei der Ausscheidung des Uroselectans, Klin. Wchnschr. 9: 684-689 (April) 1930.

* From the radiologic and urologic services of the Mount Sinai Hospital.

* This article is abbreviated in THE JOURNAL by the omission of six illustrations, which will be found in the author's reprints.

* Read before the Section on Radiology at the Eighty-First Annual Session of the American Medical Association, Detroit, June 26, 1930.

table for at least one hour after the injection. The best roentgenologic results are obtained fifteen, thirty-five and sixty minutes after the last injection. After that period good outlines are obtained only in cases of delayed renal function, combined with obstructive lesions. It is therefore important to have each film

Fig. 3.—Right-sided pyelo-ureteritis in girl, aged 5½ years; 16 Gm. of substance injected.

developed immediately in order to determine for how long a period the taking of roentgenograms should be continued. It may sometimes be necessary to take roentgenograms at one to three hour intervals until good shadows are obtained. Sometimes it is necessary to have the patient empty the bladder in order better to demonstrate the lower ends of the ureters.

The intravenous method is indicated in all instances in which urography is desirable and is applicable in many more cases than the retrograde method, because the objections to instrumentation are eliminated. It has thus been possible to employ this method in children as young as 6 months and in adults with large prostates, cardiac disease or other contraindications.

Contraindications to the use of the intravenous method would be actual or latent uremia in which, as a result of the poor concentrating power of the kidney, meager or no anatomic information could be obtained. For functional data, much simpler and less expensive methods, such as the blood urea determination, the phenolsulphonphthalein, indigo carmine, and the dilution and concentration tests can be applied. In addition, the procedure might prove dangerous. Therefore, it is strongly advocated by Swick that patients about to be subjected to the intravenous procedure should have at least a blood urea, phenolsulphonphthalein and concentration tests performed. The intravenous method, however, does not eliminate the retrograde or cystoscopic method; this is especially true in cases in which kidney function is impaired and therefore the iodine concentration is so poor that the tract is not sufficiently visualized. Here the retrograde method has to be resorted to in order to obtain an anatomic outline of the renal pelvis and ureter. The bladder will generally be shown well, unless both kidneys are below par. The faintest shadows are obtained with poorly functioning kidneys, the densest when obstruction is present. The roentgenographic contrast is heightened by means of the compression bag, which should be kept on for from five to ten minutes prior to and during the taking of the roentgenograms. One or more after each of these might also be taken without compression.

The advantages of the intravenous method are manifold. It intensifies the kidney shadows, frequently bringing out irregularities in outline. Instrumentation is avoided which even under favorable circumstances is, to say the least, very unpleasant and which, as will be seen from some of the illustrations, seems to cause a temporary inhibition of function of the kidney subjected to it. The entire urinary tract, including the bladder, is shown at one application of the method. With the cystoscopic method it has generally been found necessary to inject each side at separate sessions so as to avoid the severe reactions that frequently followed bilateral pyelography performed at one session. For the same reason the intravenous method is safer in cases of solitary kidney. Anomalies in the urinary tract, such as double ureters, are revealed in some cases in which

Fig. 4.—Right nephropexy in woman, aged 31; 40 Gm. of substance injected; distortion due to operation; depression in left upper quadrant of bladder is due to the uterus.

the cystoscopic method failed for technical reasons. It is not subject to failure in stricture of the ureter and is the only useful method in the study of the result of transplantation of ureters. It eliminates the artefacts which not infrequently complicate the other method and sometimes make one hesitate to designate a transparency within the opaque material as a calculus

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rather than an air bubble or to say that a defective calix is due to a pathologic lesion and not to poor injection technic, especially when the urologist happened to be one of limited experience.

An added advantage of this method is that it demonstrates not only the anatomy of the urinary tract but

Fig. 5.—Bifid right renal pelvis and forked ureter. One week after a left retrograde pyelogram which was done three months previously, the left side did not visualize at all, and the right side but slightly. Now both sides are well visualized.

also its function. The roentgenographic determination of function is, however, not sufficient in itself; according to Swick it should be supplemented by the quantitative determination of the excreted substance, which can be recovered from the urine. It will undoubtedly also give information regarding peristalsis of the ureters and the physiology of the pelvis and calices. In some cases of renal calculus, spasm of the calices was shown, probably as a reaction to the presence of the foreign body. In others in which the retrograde method preceded the intravenous, temporary nonvisualization on that side was present. It is important, therefore, to remember that the mere nonvisualization at a given examination does not necessarily denote permanent renal damage and therefore it is wiser to use the term functional inhibition.

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ABSTRACT OF DISCUSSION

PROF. LEOPOLD LICHTWITZ, Altona-Elbe, Germany: Pyelography by way of excretion is an old desire. Dr. Rowntree was the first to attempt the visualization of the urinary tract by means of sodium iodide. Professor Binz of Berlin, who for a long time was greatly interested in chemotherapy, invented and prepared with his collaborators the group of selectans. Selectan and selectan neutral were sent by him to the clinic at Altona with the idea of attempting to influence coccus infections. In order to attempt treating infections of the kidney pelvis and gallbladder, we studied the output by the kidney and liver. We obtained evidence that the preparations did not cause iodism. The fact that these selectans are iodine-containing, excretable by the kidneys and liver and cause no iodism, which had been the greatest obstacle in the earlier attempt, naturally led to the idea of testing them for the widely desired intravenous pyelography. Surely the invention of Professor Binz is the one leg of the new method. The second basis is the work of Dr. Swick. Important as is the existence of preparations, they become valuable only when the right person takes them for a special purpose. This is made clear by the fact that the preparations of Professor Binz were tested for the same purpose before Dr. Swick began his studies (without his knowledge) by a man of great experience in research work—without sufficient results. Between the important work of chemical preparation and final success, there came the hard work of a clever and energetic man, one with the deepest devotion to and greatest passion for research work. Therefore, we appreciate the work of both Professor Binz and Dr. Swick, and as this work is based on the invention of a famous German chemist and the investigations of a young American working in Germany, it may be considered as another hopeful symptom of scientific cooperation and friendship between our two countries.

PROF. ARTHUR BINZ, Berlin, Germany: It was my idea in 1921 to attach arsenic or other elements such as iodine to heterocyclic nuclei, such as those of the alkaloid group, and possibly thereby intensify therapeutic efficiency in the treatment of syphilis. My assistant, Dr. Raeth, and I chose the simplest heterocyclic nucleus, the pyridine, and transformed it into about 700 new arsenic and iodine compounds. Expecting them to be very toxic, we were much surprised to find several of an unheard

Fig. 6.—Papillary carcinoma of urinary bladder extending from the left orifice to the internal sphincter, according to cystoscopic diagnosis, in woman, aged 62; 50 Gm. of substance injected. The left ureteral orifice cannot be seen. There was no indigo carmine excretion from left side; good blue from right. Intravenous pyelogram shows dilatation of left urinary tract, especially of juxtavesical and intravesical portions of the ureter. The denser shadow on the left than on the right normal side is due to partial obstruction at the left ureteral orifice.

of tolerability when compared with the known arsenic and iodine compounds. This new biochemical principle, which we ascertained in animal experiments, caused me finally to select sodium-2-oxo-5-iodo-pyridine-N-acetate ("Uroselectan") for intravenous urography. This new relationship between chemical

structure and biologic action we published in the *Zeitschrift für angewandte Chemie*. Sodium-2-oxo-5-iodo-pyridine-N-acetate, in its present form, was made in 1927, long before Dr. Swick came to Germany. Its selection by me for the purpose of intravenous urography was not due to suggestions of Dr. Swick but was in answer to clinical principles which had been agreed on by Professor von Lichtenberg and me, before Professor von Lichtenberg's trip to America last year. Concerning priority, Hryntschak of Vienna in 1927 was the first to investigate selectan compounds for intravenous urography, including what is now known as sodium-2-oxo-5-iodo-pyridine-N-acetate. Hryntschak obtained but partial success. Professor Lichtwitz of Altona in 1929 in his investigation of the treatment of human infections by selectan neutral, which I had sent him, observed that this compound had another effect which concerned intravenous pyelography. But all these results were clinically negligible. After working with selectan neutral and other selectan compounds, in Professor von Lichtenberg's clinic, and obtaining disappointing results, final success was achieved when I selected sodium-2-oxo-5-iodo-pyridine-N-acetate for use. It was given by me to Dr. Swick, who had been appointed by Professor von Lichtenberg to try out the compounds that I would give him.

DR. MOSES SWICK, New York: When I began my studies, as Professor Lichtwitz has pointed out, a substance synthesized by Professors Binz and Räth, having the formula m-methyl-5-iodo-pyridon ("Selectan Neutral") was being tested for coccus infections at his clinic in Altona, Germany. Studies on its excretion, and its iodine content, led to the idea of applying it for roentgenologic purposes. The encouraging results pointed to the possibilities of further development. Following a dose of 6 Gm. (one third of the calculated maximal dose), certain disturbing symptoms resulted. Some were headache, nausea, vomiting and general discomfort. Of particular interest was the occurrence of transient diplopia in two cases. This suggested the possibility of the methyl radical being the toxic factor. My experience with this substance brought out the need for a modification, possessing better tolerance, greater solubility, and a higher iodine content, so that a larger dose could be administered and a higher concentration of the excreted iodine component be obtained. This work had been carried out at the clinic of Professor Lichtwitz for seven months before conferences were held with Professor Binz. The full data concerning these conferences and other matters here discussed will be presented by me tomorrow before the Section on Urology. As a result of my first presentation of the needs to Professor Binz, he furnished me with a compound, which, because of its insolubility, had to be administered by mouth and gave no results. At the second conference, in which Professor Lichtwitz participated, the whole ground was gone over again. Professor Binz felt confident that our needs could be fulfilled. Thereafter I continued the investigations in the clinic of Professor von Lichtenberg. There again I tested "Selectan Neutral," the second substance, and a third furnished by Professor Binz, which also had to be given by mouth and was unsuccessful. Finally, Professor Binz gave me a substance of the selectan group, which had a sodium acetate radical substituted for the methyl (sodium-2-oxo-5-iodo-pyridine-N-acetate). This compound fulfilled the needs, and satisfactory urograms could now be obtained. Professor von Lichtenberg, who was in the United States at the time, was promptly informed of the results. These were reported by me in detail at the Urologic Congress in Munich in September, 1929. I am not a chemist but have interested myself along the chemical lines required by the theoretical side of my problem and the chemical examinations needed in the course of the clinical investigations.

DR. THEODORE SOKOW, Kenosha, Wis.: The use of this new method necessitates changing one's conception in explaining and diagnosing roentgenograms. With the cystoscopic method, a forcibly dilated kidney pelvis is obtained, not corresponding to the anatomic conditions. With the intravenous method, the physiologic dynamic conditions of the kidney and ureters are observed. That explains why pictures taken at the moment of the kidney contraction may show the pelvis very small and the calices not at all. Only in the diastole is a perfect picture obtained. Certain technical procedures may improve the results, as elevation of the pelvis of the patient and compression of the region of the lower ureters. In one of the latest articles, Dr. Hryntschak of Vienna is recommending the use of solution of pituitary to increase the concentration of the dye in the kidney and atropine to delay the excretion of the dye. It seems worth while to try these and other drugs for the same purpose. In my experience, sodium-2-oxo-5-iodo-pyridine-N-acetate has given very good results and few after-effects. About two months ago, at the annual convention of the German Roentgen Society in Berlin, different authors mentioned a new product, produced by another chemical concern in Germany. I was able to secure lately a small amount of this chemical, and used it in different cases with very satisfying results.

DR. L. T. LE WALD, New York: Dr. Jaches has brought out two or three uses that seem to me very important. As I have had one case of implantation of both ureters into the sigmoid, similar to his case, and as I know of several cases at the Mayo Clinic, I would be interested to learn whether the rest of these cases could be examined and see whether dilatation of the ureters has occurred in the other cases in which there was exstrophy of the bladder. The second point relates to the possibility of misinterpretation, because one kidney didn't show function temporarily which might lead one into error. Dr. Jaches, however, has emphasized the fact that either repeating the test or roentgenographing the patient at a little later time shows that the kidney did function, thus avoiding erroneously diagnosing a single kidney because of this possibility of spasm interrupting the secretion. And then in case of horseshoe kidney, I think it is exceedingly valuable. Occasionally in a thin subject, at least in one case, I was able to see the shadow of the kidney going across the median line, but as a rule one would be in doubt in a case of that sort. In Dr. Jaches' case, the shadow was certainly very conclusive after the use of sodium-2-oxo-5-iodo-pyridine-N-acetate. I would like to ask Dr. Jaches if any alarming reactions have occurred. A urologist in New York told me that in his first case in which the injection was given through rubber tubing he had had some reaction and he did not give more than half the dose and then desisted from finishing the examination, saying that the patient had some dizziness and collapse, and he didn't feel safe in going on. I wish Dr. Jaches would say a word or two more about technic.

DR. B. R. KIRKLIN, Rochester, Minn.: You might be interested to know of a little Scotch trick that we have employed at the Mayo Clinic. Dr. Braasch and his associates have been collecting the urine of the patients after they have received sodium-2-oxo-5-iodo-pyridine-N-acetate and sending it to the chemist, who has been able to recover approximately 65 per cent of the amount originally injected. I am informed by the chemist that the substance recovered in this way is a purer product than the original drug.

DR. LEOPOLD JACHES, New York: In 122 cases there have been no unpleasant reactions. What was the cause of the reaction in the case quoted by Dr. Le Wald, I do not know. It may be that this patient was an unsuitable subject. I suggest that this case be reported with all clinical data, so that more can be learned about all possible contraindications than is known today. I am glad to hear from Dr. Kirklin that at the Mayo Clinic the material was used over again. Dr. Swick has proposed the same thing to me but as yet I have not followed his suggestion. I made up my mind to keep out of the controversy regarding the origin of this matter. I would like, however, to say in connection with what has been stated concerning Dr. Hryntschak that a real practical success did not result from his studies. As Dr. Swick is much more familiar with this phase of the subject, he should be permitted to discuss it for me.

DR. MOSES SWICK, New York: At the Urologic Congress in Munich in 1929, where I presented my paper, Dr. Hryntschak was present. He did not discuss the subject but in his article which appeared at that time in the *Zeitschrift für Urologie* in 1929 he said on page 904 that although he had succeeded two and one-half years before in obtaining useful pyelograms in a few cases, the method had by no means met the conditions set forth by him. He, however, expressed the hope of accomplishing his aims by continued investigations. I might add that he gave neither the name nor the chemical formula of any of the substances employed, but he mentioned three of them by number as 12, 27 and 48.

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MALIGNANT CHORIONEPITHELIOMA UTERI *

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Tumors of the chorion have interested the profession for many years. Saenger [1] in 1888 described the symptoms and diagnosis, and Fränkel [2] and Marchand [3] in 1895 demonstrated that the chorionic epithelium gave rise to these growths. In 1910 Ewing [4] published his investigations on the prognosis of these growths based on a histologic study.

The difficulties of making a clinical and pathologic diagnosis of the diseases and the tumors of the chorion are great. The fact that under normal conditions syncytial wander cells are found in the decidua and the myometrium, and that some of the choriomas are composed of all the elements and others of only the epithelial cell elements of the trophoblast, are responsible for the difficulties in diagnosis.

Six cases of malignant chorionepitheliomas were observed in our clinic within a relatively short time. They were referred on account of severe uterine bleedings, while one case was referred for diagnosis (case 2). The pathologic, diagnostic and therapeutic observations made in these cases are herewith recorded.

Malignant chorionepithelioma is a tumor originating in the epithelium of the chorionic villi. Hence it occurs only in association with pregnancy and therefore appears during the child-bearing period of a woman's life. The new growth is always located in the genital tract, namely, the uterus, the uterine tubes, the ovaries or the abdomen, depending on intra-uterine, tubal, ovarian or abdominal pregnancy. Malignant chorionepithelioma develops from fetal instead of from maternal tissues, often in the earliest stages of pregnancy, and ultimately destroys the mother's life.

A diagnosis of malignant chorionepithelioma must be made when solid masses of syncytial and Langhans cells are found side by side with destruction of uterine tissues, invasion and erosion of blood vessels, and presence of extensive necrotic masses, pointing to rapid proliferation of tumor cells. The growth does not possess a stroma or a blood supply of its own.

Chorionepitheliomas may be typical, transitional and atypical. They may be primary or follow a simple or an invasive hydatid mole or placental polyp. Chorionic cells in the form of large syncytial wander cells may be found in the maternal tissues during the entire course of normal pregnancy. The trophoblast possesses all the cell elements, and even the invasive and destructive powers characteristic of malignant growths though they are entirely physiologic in nature.[5] It is obvious that the differential diagnosis of these diseases and conditions is perplexing and should rest on the pathologic and clinical observations.[6]

The pathology of these various lesions can be best studied by comparing the latter with the structure and maternal relations of the trophoblast. The primitive trophoblast is composed of all the elements of the chorionic villus; namely, syncytium, Langhans cells and a connective tissue core. The syncytium forms the thick outer layer. It contains many vacuoles which give it a spongy and reticulated appearance. The layer of Langhans cells is located beneath the syncytial cell layer. The connective tissue forms the central core. Uncoagulated blood derived from the maternal blood is contained in the vacuoles. Capillaries or blood vessels are not seen. Syncytial wander cells invade the underlying decidua during the entire period of pregnancy. The zone of the decidua adjacent to the blastocyst becomes destroyed and degenerated as the result of the invasive and destructive power inherent in the blastocyst and ascribed to the Langhans cells. The latter show an enormous proliferation and active mitosis which breaks up the maternal blood vessels, the decidua and the uterine glands until the young villi become attached to the maternal tissue, when the invasive and destructive activities of the fetal trophoblast cease. At the site of contact of the fetal and maternal tissue elements a fibrinous layer, Nitabuch's membrane, becomes interposed. It is an expression of a reaction of the maternal structures against fetal invasion.

The simple hydatid mole, also, contains all the elements of the chorionic villus. It probably appears during the earliest stages of chorionic development. The syncytium participates actively in the proliferation with the formation of many vacuoles. The layer of Langhans cells remains rather inactive and may be scarcely discernible. The connective tissue core is always present, though regression may be seen. Absence of this mesodermic layer means degeneration into a chorionepithelioma. The vacuoles form vascular lacunae. Fetal capillaries are absent. Mucous edema of the villi causes formation of vesicles, which have given the growth its name. A simple mole is never invasive and lacks the powers of destruction and metastasis. It usually terminates suddenly by becoming detached from the maternal structures and being expelled in toto. Where the mole comes in contact with the maternal tissue a fibrinous layer is interposed with a zone of plasma and round cells, leukocytes and fibroblasts.

The invasive hydatid mole, termed chorionadenoma destruens by Ewing, possesses all the characteristics of the simple mole. However, the molar villi dip down into the maternal tissues in continuity, causing destruction and cleavages in the uterine wall. Epithelial cell metastases are never seen locally or distantly. The cells possess only limited capacity for independent growth. Proliferation of the molar villi into the uterine blood vessels is marked without the occurrence of any destruction of vessel walls or invasion of the adjacent tissue. The invading villi are enclosed in a true leukocytic limiting wall with plasma cells and fibroblasts. Syncytial cells are not seen outside this fibrinous layer. Detachment of the mole from the maternal tissue and expulsion in toto are often seen. The growth is absolutely benign in its histologic character, as autonomous growth of cells has not been observed.

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1. Saenger: Ueber Sarcoma Uteri, Zentralbl. f. Gynäk. **132,** 1889.

2. Fränkel, E.: Maligne Tumoren des Chorionepithels, Samml. klin. Vortr. **180,** 1897.

3. Marchand, F.: Ueber die sogenannten decidualen Geschwülste im Anschluss an normale Geburt, Abort, Blasenmole und Extrauterine Schwangerschaft, Monatschr. f. Geburtsh. u. Gynäk. **1:** 419, 513, 1895.

4. Ewing, James: Chorioma: A Clinical and Pathological Study, Surg. Gynec. Obst. **10:** 366, 1910. Caturani, Michele: Hydatidiform Mole and Chorionepithelioma, Am. J. Obst. & Gynec. **75:** 591 (April) 1917. Rosenzweig, M.: Syncytial Endometritis and Syncytioma, ibid. **13:** 563 (May) 1927. Wolfe, S. A.: Chorionadenoma and Chorioncarcinoma of Uterus, ibid. **17:** 826 (June) 1929.

5. Teacher, J. H.: Chorio-Epithelioma Malignum, New System of Gynecology, Eden and Lockyear **2:** 555, 1917.

6. Meyer, Robert: Beiträge zur Pathologie und Klinik des Chorionepithelioma uteri malignum, Ztschr. f. Geburtsh. u. Gynäk. **92:** 259, 1927.

The typical malignant chorionepithelioma is composed of both epithelial cell elements of the chorion. They assume embryologic morphologic characters and biologic activities. The cells form masses and columns with marked vacuolation and necrosis. One or the other cell type may predominate. The connective tissue core disappears entirely as a result of the proliferating activities of the epithelium. Mucous degeneration in the epithelial cells leads to the formation of vesicles. Fetal capillaries are absent. Syncytial wander cells are often seen in the maternal tissue.

The syncytial and Langhans cells are in active proliferation, have many mitotic figures and show marked anaplasia. The highest potential malignancy seems to be conferred by the presence and activity of Langhans cells. There is invasion by active penetration of the vascular sinuses and destruction of the adjacent tissue. Metastasis takes place by emboli in blood vessels locally and distantly. The growths and metastatic foci cause

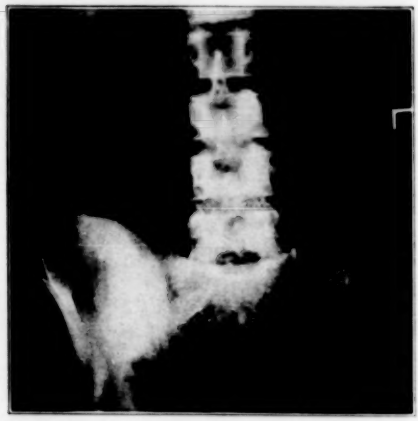

Fig. 1 (case 8).—Appearance of pelvis showing fetus in transverse position and an irregularity in uterine wall at upper right side.

the formation of a zone of reaction of the maternal tissues against the invasive malignant cells. It is composed of round and plasma cells, leukocytes and fibroblasts.

A malignant chorionepithelioma never regresses and rapidly destroys the life of the host.

The atypical chorionepithelioma, or malignant syncytioma of Ewing, is composed only of syncytial cells which assume all the characters observed in the typical chorionepithelioma. The syncytial cells show autonomous growth, anaplasia and abnormal mitotic action with invasion, destruction and metastasis. However, definitely degenerative changes occur early and rapidly and contribute to a relatively benign course.

Ewing describes under the name of syncytial endometritis a condition characterized by the invasion of syncytial cells into the uterine walls. The cells are seen singly but in excessive infiltration. They are ultimate transformations of the syncytium, have reduced vitality, and seldom, if ever, develop a progressive tumor. Active external penetration of vascular sinuses, perivascular invasion from within and local or distant metastases are never seen. There appears to exist a simple hyperplasia of syncytial cells. The condition is benign and regression has been repeatedly observed after a simple curettage. The concomitant inflammatory leukocytic infiltration is a reaction of the maternal tissues to the foreign cells. Many cases of so-called endometritis post partum or abortum probably are instances of these syncytial hyperplasias.

The conclusion may be drawn that the simple and invasive moles are marked by the relative inability of the chorionic epithelium to rid itself from the connective tissue core of the villus to form independent epithelial growths. Hence the persistence of the mesoderm in the chorionic invasion constitutes a reliable index of relative benignancy. Whenever malignant qualifications develop in the chorionic epithelium, as invasion, destruction and capacity for metastases, then the mole ends, and with the disappearance of the connective tissue core the chorionepithelioma begins.

Lutein cysts of the ovary are observed in from 10 to 20 per cent of the diseases and new growths of the chorion. As soon as the mole has been expelled or the chorioma has been removed, the cysts regress as they do after the termination of a normal pregnancy.

Distant metastases occur in lung, vagina, brain, liver, kidney and spleen, arranged in order of frequency. Metastases appear as dark red or reddish brown thrombus-like formations. The color results from old or fresh hemorrhages in the tumor substance.

It is evident from the discussion that histologic examinations should be done on all tissues expelled or curetted after abortions, full term labors, and especially after expulsion of a mole. Microscopic examinations at repeated intervals may be indicated in cases in which suspicious tissues are found or uterine bleeding recurs. Rapid frozen sections from curetted material should be employed in doubtful cases. One should always remember that a negative histologic examination does not exclude the presence of a chorionepithelioma, especially if the growth has an intramural location and is inaccessible to the curet.

Spontaneous regression, according to Ewing,[4] after formation of metastases and incomplete removal, occurs only in the atypical chorionepithelioma and the simple and invasive hydatid moles but never in typical malignant chorionepitheliomas. According to the same author the syncytiomas contribute only 5 per cent to the total number of fatalities from choriomas. In such cases, hemorrhages or secondary infections usually are the direct cause of death.

SYMPTOMATOLOGY

Saenger[1] propounded the following eight factors in the clinical diagnosis: (1) a history of a preceding labor, abortion, or expulsion of a hydatid mole; (2) persistent hemorrhages from the uterus continuing after a curettage; (3) hemorrhagic putrid discharge and secondary infection following intra-uterine instrumentation; (4) progressive enlargement of the uterus; (5) rapidly progressing anemia and cachexia; (6) early metastases especially in the vagina and the lungs; (7) lung involvement which is probably present when dyspnea, cough and bloody expectoration appear, and (8) a rapid course of the disease terminating in death within from six to seven months.

Bimanual palpation reveals the enlarged uterus, often irregular because of the site of growth. The consis-

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tency is usually normal but may be soft, especially in unfavorable cases. If the cervical canal remains open after abortion, labor or expulsion of a mole, then a digital exploration of the uterine cavity should be done to determine absence of all tissues from the uterine cavity and the condition of the uterine wall. About 10 per cent of the cases of hydatid mole are followed by a chorionepithelioma. If one is in doubt about the invasive character of the growth after palpation or if an intramural growth exists, a vaginal hysterotomy should be performed. In a recent case of malignant chorionepithelioma the patient gave a history of uterine hemorrhages of about two months' duration and profuse menorrhagias for six months previously. The patient was a nullipara, 35 years of age. On examination the uterus had the size of a twenty weeks' pregnancy and the organ was rather firm in consistency. Fetal quickening was present but fetal heart sounds were not elicited. A roentgenogram of the pelvis revealed a fetus in transverse position in the lower uterine segment. The amniotic sac and placenta occupied an unusually large amount of space. Within twelve hours after admission to the hospital the patient expelled the fetus and membranes spontaneously. Examination of these did not show anything abnormal. The uterus did not undergo any appreciable involution within ten days and a digital examination at this time revealed a growth in the posterior upper wall of the uterus. Examination of a frozen section of tissues removed with the curet showed malignant chorionepithelioma. An abdominal panhysterectomy was immediately performed (figs. 1, 2 and 3). Ponzian[7] used hysterography after the injection of iodized oil to determine the presence of a chorioma in the uterine cavity.

The danger of forcing tumor tissue into the abdominal cavity through the uterine tubes or the weakened uterine wall is great and hence such diagnostic measures should not be recommended.

Fig. 2 (case 8).—Typical chorionepithelioma.

Aschheim[8] states that the urine of patients with hydatid moles or chorionepitheliomas gives a pregnancy reaction in mice about twelve times stronger than that obtained from a two months' gestation. The serum of such patients also is not lytic to chorionic epithelium, while serum of normal pregnant mothers is lytic according to Fränkl. Since these biologic tests have been simplified and are easy of execution, it would seem that the reactions are a great aid in the diagnosis of choriomas.

The differential diagnoses comprise: hydatid mole and placental polyps, either simple or invasive; endometritis post abortum and post partum; uterine carcinoma and sarcoma; bleeding uterine polyps, and adenomyoma uteri.

Fig. 3 (case 8).—Typical chorionepithelioma sharply demarcated from myometrium with leukocytic infiltration.

The treatment should be radical if a histologic diagnosis of malignant chorionepithelioma or malignant syncytioma has been made. Even if metastases should be found, hysterectomy may still be done, as regression of metastases has been observed in all choriomas. The syncytial endometritis, if occurring in young women, should be subjected to careful curettage. Should the hemorrhages recur after the curettage, hysterectomy or intra-uterine radium insertions are advisable.[9] Individual problems may present themselves in each case and should be treated accordingly. In general it may be stated that, if conservative measures do not suffice in syncytial endometritis, hysterectomy must be done.

In late years quite a number of cases of malignant choriomas have been reported that were successfully subjected to irradiation.

In 1917 a patient in the sixteenth week of pregnancy entered the clinic on account of severe hemorrhages from the right kidney. A diagnosis of a malignant tumor of unknown type of the right kidney was made. On account of the anemic condition of the patient and the pregnancy, the kidney was treated with filtered x-rays and the hemorrhages ceased. About a month later the uterine contents were suddenly expelled. Microscopic examination revealed a typical malignant chorionepithelioma. Radium was inserted within the uterus and heavy filtered x-rays were applied. The patient is well at the present time. Similar cases have been reported by Naujoks,[10] Gordon,[11] Szathmary,[12]

7. Ponzian, Antonio: La diagnosi radiologica della mola vesicolare, Atti Soc. Ital. ostetr. **26:** 461, 1928.
8. Aschheim, S.: The Early Diagnosis of Pregnancy, Chorionepithelioma and Hydatidiform Mole, Am. J. Obst. & Gynec. **19:** 335 (March) 1930.
9. Rosenzweig (footnote 4).
10. Naujoks, H.: Heilung eines Chorionepithelioma malignum durch Roentgenstrahlen, Monatsschr. Geburtsh. u. Gynäk. **58:** 189 (July) 1922.
11. Gordon, O. A.: The Treatment of Hydatidiform Mole and Chorionepithelioma, Surg. Gynec. Obst. **36:** 242 (Feb.) 1923.
12. Szathmary, Zoltan: Ueber das Chorionepitheliom, Orvosi Hetil. **70:** 505, 1926 (Ra).

Liebe,[13] Klein [14] and others. The epithelial tumor cells of choriomas are of a highly embryonic, anaplastic and undifferentiated character and should be very radiosensitive. Therefore radiation therapy should be applied, especially to patients who are poor surgical risks.

In our cases, with one exception, prophylactic radiations were used. This may explain the favorable outcome of the cases. One patient has been well thirteen years and another one two years, after treatment with radium and x-rays. Of five patients surviving operation, four were given x-rays after operation. One has been well for three years, one for two years, one for one year and one for six months. One patient is well one year with operation only. One patient survived the operation only a few days. She was septic when the operation was undertaken. One case of recurrence with brain metastases after hysterectomy was treated unsuccessfully with short wave x-rays. It is generally assumed that absence of recurrence within one year after treatment should be interpreted as an absolute cure.

CONCLUSIONS

1. All tissues expelled during an abortion, a full term labor or an expulsion of a mole should be examined microscopically to exclude disease or new growth of the chorion. A hysterotomy and biopsy should be done if curettage is negative and the presence of a chorioma is suspected or recurrent bleeding is present.

2. The prognosis and indications of treatment can be made with relative safety from the histologic examination. Absence of the connective tissue core means malignant chorioma.

3. The treatment of choice of typical malignant chorionepithelioma is hysterectomy, even if metastases are present, as the latter have been known to regress following removal of the primary growth.

4. It appears that radiation therapy in combination with surgery may improve the prognosis of surgical treatment. However, the number of cases reported in the literature as successfully treated with irradiation is too small to warrant any positive conclusions.

5. Careful examinations and early diagnoses are the only criterions for a successful therapy of the highly malignant tumors of the chorion.

REPORT OF CASES

CASE 1.—Mrs. McK., aged 32, sextigravida and quintipara, admitted to St. Mary's Hospital, Sept. 21, 1918, had had hemorrhages from the right kidney three months previously. A diagnosis of malignant tumor of the right kidney was made from the pyelogram. Because of the pregnancy it was treated with high voltage roentgen therapy, which arrested the bleeding.

September 23, a fetus with membranes intact was expelled spontaneously. Microscopic examination revealed a typical malignant chorionepithelioma. The kidney tumor was then considered a metastasis. Radiation therapy was advised and 2,040 mg. element hours of radium filtered with 2 mm. of brass was given within the uterus and a 150 per cent erythema dose of x-rays was applied to the center of the pelvis through suprapubic and sacral fields.

The patient has remained well.

CASE 2.—Mrs. E. S., aged 32, primigravida, primipara, seen in consultation, April 28, 1926, had an amenorrhea from November, 1925, until Feb. 14, 1926, when uterine hemorrhages occurred. These stopped while the patient was kept in bed at absolute rest but immediately reappeared on her arising. April 7 a mole was expelled. A microscopic examination was not made.

The hemorrhages continued and within two weeks bimanual examination revealed large masses of unknown nature in both parametria. April 28 a panhysterectomy was done. The ovaries were the size of large oranges. Microscopic examination revealed a typical chorionepithelioma. The patient died from sepsis and peritonitis, May 16.

CASE 3.—Mrs. B. O., aged 20, primigravida, nullipara, was referred from the Cook County Hospital to Mercy Hospital for radiation therapy of a typical chorionepithelioma malignum with extensive metastases in the vagina. She gave a history of amenorrhea of two months' duration since Aug. 6, 1927, followed by severe metrorrhagia, which was still existent on admission. She had marked vomiting of pregnancy. A mole was expelled, Jan. 15, 1928, which was followed by pyrexia. January 22, extensive invasive and ulcerative growths were found in the left vaginal wall and parametrium. Microscopic examination of tissues revealed a typical malignant chorionepithelioma.

The treatment consisted in the intra-uterine insertion of 2,400 mg. element hours of radium filtered with 2 mm. of brass and the application of 800 r units of x-rays each to a suprapubic and a sacral field from January 31 to February 14.

The patient recovered anatomically and has remained well to the present time.

CASE 4.—Mrs. S. M., aged 22, secundigravida, secundipara, admitted from the Cook County Hospital for radiation treatment of brain metastases due to a recurrent chorionepithelioma, Feb. 10, 1928, had had uterine hemorrhages for six months prior to a panhysterectomy performed for the hemorrhages in September, 1927. Seven weeks later intense headaches developed accompanied by a left-sided paralysis, and in December, 1927, a tumor was discovered in the pelvis. A biopsy was then performed which revealed a typical malignant chorionepithelioma. X-ray doses of 800 r units each were applied to the brain and to the pelvic tumor. However, the patient succumbed within three months.

CASE 5.—Mrs. A. C., aged 39, was admitted to the service of Dr. O'Donohue, Sept. 9, 1928, stating that she had had an abortion in March, 1926, which was followed by a continuous bleeding from the uterus. A curettage followed by the intrauterine insertion of radium was made in September, 1927. A microscopic examination was not made. In May, 1928, persistent uterine hemorrhages, malodorous discharge and pelvic pain appeared. A panhysterectomy was performed, September 12. The histologic examination revealed a typical malignant chorionepithelioma. Short wave x-rays were applied to the pelvis from October 2 to 15, 800 r units being given to the midpelvic region. The patient has remained well.

CASE 6.—Mrs. F. G., aged 18, primigravida, nullipara, admitted, May 13, 1929, had had an amenorrhea for three months and uterine bleeding for the last four days. Examination revealed an open cervix, an enlarged uterus, the size of an eight weeks' pregnancy, and a protrusion from the cervix of dark bluish grapelike masses. Biopsy revealed a malignant chorionepithelioma. A panhysterectomy was done, May 14, and a dose of 800 r units of short wave x-rays was applied to the midpelvis from June 1 to June 29. The patient has remained well.

CASE 7.—Mrs. C. A., aged 21, primigravida, nullipara, admitted to the service of Dr. Vaughn, Sept. 6, 1929, had had an amenorrhea for five months and on September 12 a mass was expelled spontaneously from the uterus, which was followed by a continuous bleeding. A curettage was done, September 16, but the bleeding continued.

The patient reentered the hospital, October 7. A biopsy revealed a typical chorionepithelioma, and a panhysterectomy was immediately performed. The patient is well at the present time.

CASE 8.—Mrs. M. L., aged 33, primigravida, nullipara, admitted, Nov. 7, 1929, had had hypermenorrhea for four months, followed by profuse and continuous metrorrhagia for the past two months. A roentgenogram revealed a fetus in transverse position in the lower uterine segment and an unusually

13. Liebe, W.: Verschleppung von Blasenmolenteilen in die Vagina, Ztschr. f. Geburtsh. & Gynäk. **90**: 294, 1926.
14. Klein, Paul: Ueber das Chorionepithelioma malignum der Tube nach Extrauteringraviditat, Arch. f. Gynäk. **129**: 662, 1927.

large area of the supposedly amniotic sac (fig. 1). A spontaneous abortion occurred within twelve hours, a fetus of apparently three months size and a normal placenta being expelled.

The uterus did not undergo involution. An examination, November 18, elicited an open cervical canal and a soft mass in the right posterior uterine wall. An immediate diagnostic curettage was made. Examination of the frozen section revealed a typical chorionepithelioma malignum (figs. 2 and 3). A panhysterectomy was immediately performed. Short wave x-rays were applied to the pelvis, the dose being 800 r units in the midpelvis. The patient has remained well so far.

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ABSTRACT OF DISCUSSION

DR. BERNHARD FRIEDLANDER, Detroit: This paper shows the difficulties that exist in making a clinical and pathologic diagnosis of tumors of the chorion. Of 35,000 surgical specimens examined at Bellevue Hospital, only one chorionepithelioma was found. The severity of this growth depends on whether the Langhans cells or the syncytial element predominates. The Langhans type is slow growing, while the syncytial type is rapidly growing with an early tendency to metastasize. The histology of chorionepithelioma is well established by the work of Marchand, L. Fraenkel and others; nothing of importance has been added. There still exists a great deal of confusion in the biologic problem of this malignant growth and of hydatidiform mole. For a long time it was known that in hydatidiform mole and chorionepithelioma there is a formation of lutein cysts (pseudocorpora lutea or corpora lutea atretica) which must be due to some substance that has an action on the ovaries. Zondek and Aschheim, Evans and Smith have shown this formation of lutein material to take place after the implantation of the anterior pituitary and ovarian substance in animals. Murati and Adachi could produce the same results with placenta. Karl Ehrhardt found in one case of chorionepithelioma 260,000 mice units and in another as high as 520,000 mice units in 1 liter of urine. In a normal pregnancy there are no more than 8,000 to 10,000 mice units to the liter of urine. So it was evident that the formation of lutein cysts in hydatidiform mole and chorionepithelioma was due to the action of the hormone of the anterior pituitary body. Oscar Frankl demonstrated that the resistance of the mother's organism plays a great part in the formation of chorionepithelioma. He has shown that the serum of a normal pregnant woman is able to destroy fetal tissue from placenta, liver or kidney, while the serum of a woman who suffers from chorionepithelioma does not possess this lytic action. He concluded from this that the reason for the formation of chorionepithelioma must be found in the blood of the pregnant woman who shows an absence of syncytiolytic properties of the serum. He also believes that the spontaneous cures are due to a recovery of the syncytiolytic properties of the woman's serum.

DR. EMIL NOVAK, Baltimore: There is no field in gynecologic pathology in which mistakes are more readily made than in this one. There are several reasons for this. The tissue that makes up a chorionepithelioma differs little in its microscopic appearance from the tissue found in normal pregnancy and in the benign hydatidiform mole. The characteristic tissue, of course, consists chiefly of Langhans' cells and syncytial cells. It is true that in some cases of chorionepithelioma one finds definite evidence of anaplasia, such as mitoses, but, in the main, the value of this criterion is much less in this group of tumor than almost any other group. The normal pregnancy picture, that seen with the benign hydatidiform mole, and the malignant picture of chorionepithelioma, represent a gradation analogous to that seen between normal skin, benign skin papilloma and malignant epithelioma. Difficulty in diognosis occurs from the fact that the trophoblast is an invasive tissue even in normal pregnancy, its cells often pushing into the musculature and into the veins. Moreover, there is a sort of physiologic metastasis, so that particles of trophoblast are transported to distant organs, especially the lungs. For this reason, one must in some cases be influenced largely by the degree of invasiveness and the presence of evidences of destruction of the normal musculature of the uterus. In most cases of chorionepithelioma the normal villous pattern is lost, although this is not an infallible criterion. There have been many efforts made at classifying these trophoblastic lesions, the best one probably being that of Ewing, who distinguishes a sort of intermediate group between the benign hydatidiform mole and the chorionepithelioma. This intermediate type he designates as chorio-adenoma destruens. The logic of this has never appealed to me because this type of growth is really malignant. It recurs after removal, it invades adjoining tissue, it metastasizes, it does everything that a malignant tumor does, though to a somewhat lesser extent than the chorionepithelioma. Whether it can be recognized in the individual section or not, every tumor is benign or malignant, and one ought to be content to recognize only two chief forms of choriomatous tumor, the chorioma malignum and the chorioma benignum. The first of these is what is commonly called a chorionepithelioma and the second the benign hydatidiform mole.

DR. H. C. MACK, Detroit: Dr. Schmitz has referred to the Aschheim-Zondek reaction in chorionepithelioma and hydatidiform mole. Two cases of chorionepithelioma which we followed by means of this reaction gave us some valuable information regarding diagnosis and prognosis. One case developed following hydatidiform mole at four months. Panhysterectomy was performed. A small nodule infiltrated the myometrium. The Aschheim-Zondek reaction was positive before operation, remained positive three weeks after operation, and became negative after the patient had had several courses of roentgen and radium therapy. The second case was one of chorionepithelioma developing in a patient who had had nine successive hydatidiform moles; in this, her tenth pregnancy, she developed chorionepithelioma. The Aschheim-Zondek reaction was positive one month before the primary operation and remained positive after operation for four months, in spite of roentgen and radium therapy following panhysterectomy. Two months later the patient developed metastases in the vagina. These metastases were removed but the Aschheim-Zondek reaction remained positive. The patient left the city and we do not know what has happened. We have made studies of the urine of patients with hydatidiform mole and chorionepithelioma. We found that there was a high potency of anterior pituitary hormone. In hydatidiform mole a dilution of 1:5 gave a very strong positive reaction; in chorionepithelioma a dilution of 1:11. We made extracts from the tumor tissue of chorionepithelioma and obtained positive reactions, in a dilution of 1:14. Tumor implants also gave positive reactions. We have under observation a patient with a hydatidiform mole who was curetted after expulsion of the mole four months ago. The urine of this patient is still giving strong positive reactions in spite of a subsequent curettage. The uterus is still enlarged and soft; the menses are regular but somewhat abnormal; there is slight spotting. We are somewhat hesitant about saying that this patient has chorionepithelioma, but we believe there is some evidence that there is still proliferating chorionic tissue in utero.

DR. HENRY SCHMITZ, Chicago: The diagnosis should be based on the pathologic and clinical observations, especially recurrent severe hemorrhage following a supposed abortion or full term labor. The Aschheim-Zondek reaction will be of great assistance. Persistence of reaction may mean mole or chorionepithelioma. The reason I found so many patients with malignant chorionepithelioma was that these patients were referred for uterine hemorrhages possibly of malignant origin. There were only three patients who first sought help for bleeding of abnormal character. The others had been treated somewhere else, sometimes months before, and no diagnosis was made until they were sent to me on account of a suspected malignant condition. Otherwise, I am certain, I would not have seen so many cases. Hydatidiform mole, placental polyps and other conditions simulating malignant chorionepithelioma were not considered as it was my desire to discuss the malignant tumors of the chorion and the possibility of obtaining gratifying results of treatment especially with a combination of surgery and radiation therapy.

HYPERPLASTIC TUBERCULOSIS OF THE DUODENUM AND TERMINAL ILEUM

REPORT OF A CASE *

JOHN DAY GARVIN, M.D.
PITTSBURGH

Hyperplastic tuberculosis of the terminal ileum alone, without coexistent involvement of the cecum, is extremely rare. Involvement of the duodenum in the same process has never hitherto been reported.

REPORT OF CASE

A man, aged 24, seen for the first time through the courtesy of Dr. R. R. Snowden, Oct. 19, 1927, complained of diarrhea which had had its onset in February, 1925, there being at that time from six to ten bowel movements a day with no blood and no griping. After a few weeks this subsided; following dietary changes, he felt better, the stools became formed, and the number of movements was reduced to one a day. His weight then reached 154 pounds (70 Kg.). A year later (1926) he had, once a month, a recurrence of his diarrhea, lasting from two to three days, most of them abating spontaneously. At times he would have a temperature of 102 F. and a leukocytosis of as high as 14,000. Three weeks prior to the time I first saw him, he had had such an attack; the bowel movements were quite frequent and of a bad odor, but there was no blood or griping.

The physical examination was essentially negative when done by me (and had been persistently so for the two years previous when under Dr. Snowden's care, with the exceptions just noted) save for a complete indirect inguinal hernia on the right and a generalized abdominal tenderness of mild degree. He weighed then 127 pounds (57.7 Kg.).

Dr. George W. Grier had roentgenographed his stomach previously and had noted persistent duodenal deformity, which he attributed to a probable ulcer. In the light of subsequent events, this observation was quite significant. Stereoroentgenograms and repeated physical examinations of the chest were all negative. Fluoroscopic and roentgenographic examinations of the colon were done by me four times over a period of two years and each had been quite normal. At one time a careful stool examination showed the presence of many *Endamœba nana* organisms, usually nonpathogenic. Nevertheless, acetarsone and chiniofon were given, at various times, without any appreciable improvement.

Repeated proctoscopic examinations were negative. Throughout all this time, dyspeptic symptoms, described by the patient as sour gas, belching, soreness in the pit of the stomach and gas pains in the pit of the stomach when he had diarrhea, were prominent. The blood Wassermann reaction was negative, many sputum tests were negative and the gastric test meal showed a total acidity of 20 and a free hydrochloric acid value of 10. Urinalysis was negative.

Hypertrophic tuberculosis of terminal ileum.

Aug. 16, 1929, he appeared, definitely emaciated, and complained of being "bloated." His weight was 123 pounds (56 Kg.). At this time another roentgen examination of the colon was done. The colon itself appeared quite normal, as it had before. However, when the barium had flowed into the terminal ileum, that part did not exhibit any spasticity or filling and emptying phenomena but held the medium evenly and to the palpating hand presented a definite, infiltrated, thickened wall. The remark of an assisting nurse, "It feels just like a rope," was most descriptive, as shown in the illustration. The diagnosis of hyperplastic tuberculosis of the terminal ileum was made and operation advised. The patient refused.

When seen again, September 30, he was definitely worse and complained bitterly of heartburn, nausea and vomiting. Roentgen examination of the stomach at this time showed a large, obstructed organ, with retention 3, after six hours. Operation was urged in order to relieve the retention, no diagnosis other than "lesion at the outlet" being made.

October 7, he was operated on by Drs. W. A. Dearth and H. E. DeWalt, who explored the right lower quadrant before directing attention to the stomach. The terminal ileum was markedly thickened for a distance of about 15 cm. from the cecum and the serosa was studded with tubercles, giving it the "sandpaper appearance suggestive of tuberculosis" noted by Erdman.[1] The cecum was uninvolved. The stomach was normal aside from some hypertrophy but the duodenum was markedly thickened and studded with tubercles much the same as was the ileum. Practically complete obstruction of the pylorus had resulted. There was no other evidence of involvement throughout the abdomen. There were no enlarged glands and the terminal ileum was freely movable. Because of the very poor condition of the patient, surgery other than gastro-enterostomy to relieve the obstruction was not attempted. The patient's family was informed of the conditions found and told that resection of the affected bowel would ultimately be necessary.

His convalescence was uneventful and on Jan. 3, 1930, his weight was 147 pounds (67 Kg.) and he was feeling very well. He was having but little diarrhea and no dyspepsia of any kind. February 11, he felt "dull and heavy in the stomach," was having some diarrhea, and his weight had dropped to 144¾ pounds (65.8 Kg.). Since that time there has been no improvement in his condition, the diarrhea and bloating have become a bit more noticeable, and his weight, May 9, was 134½ pounds (60.7 Kg.). Physical examination on this last date revealed a readily palpable, elongated tumor in the right lower quadrant. This could not be palpated at any time before the operation.

COMMENT

Tuberculosis of the intestine exists in four forms, according to the French classification:[1] 1. The common ulcerating type. 2. The stenosing or cicatricial type, resulting from contraction of the healed ulcer. 3. The enteroperitoneal type, combining ulceration, hyperplasia and involvement of the adjacent peritoneum, mesentery and lymph nodes. 4. Chronic hyperplastic

* Read before the Section on Radiology at the Eighty-First Annual Session of the American Medical Association, Detroit, June 27, 1930.

1. Erdman, Seward: Hyperplastic Tuberculosis of the Intestines, Ann. Surg. 71: 637-647 (May) 1920.

tuberculosis. According to Lemon,[2] but two types are usually distinguished: 1. The ulcerating type, practically always secondary to pulmonary tuberculosis and a not uncommon complication in tuberculous patients. 2. The hypertrophic type, which was first described by Hartmann and Pilliet [3] in 1891 and is evidence of the successful reaction of the body against organisms that are either few in number or attenuated in virulence. It is a manifestation of the natural ability of the body to care for infection and has been described as the real surgical tuberculosis.[2] Infection probably occurs through the blood or lymph stream and the lesion takes the form of a localized hyperplastic structure, formative rather than destructive.

The most frequent seat of the disease is the ileocecal region, the tumor mass often attaining great proportions and resembling, macroscopically, carcinoma. Occasionally the rectum is involved. Involvement of the small intestine alone is rare, Lartigau [4] reporting but two cases. Masson and McIndoe [5] reported four others from the literature, their case being the seventh on record in which the process was confined to the ileum. This case is, therefore, the eighth in which the ileum is involved to the exclusion of the cecum and the first in which involvement of the duodenum is also present.

The most striking feature of the disease is the extremely thickened intestinal wall. Lartigau in describing it says "The wall of the intestine feels firm and is of a whitish or grayish color, occasionally studded with yellow points owing to the presence of caseous tubercles." He also speaks of narrowing of the lumen as being almost constant, the stenosis being produced, in such a case, by hyperplasia of the tissues of the wall. In this case the effect of the stenosis was noted more in the duodenum than in the ileum at the time of exploration. Ulcers are rarely absent in all portions of the mucosa, even though they are not at first apparent. The furred edge of the bowel, as noted in the roentgenogram, is probably caused by ulceration. The rises in temperature and the occasional leukocytosis as noted in the patient's history probably resulted from this factor also. Polypoid and papillomatous formations are often seen.

It is a disease of long duration. The chronicity and the low grade of inflammation are believed by Masson and McIndoe to be due "either to an attenuated bacillus" (as noted by Lemon) "or to one of low virulence elaborating small quantities of exotoxin sufficient only to produce proliferation and not necrosis."

Regarding the etiologic factors, Lartigau says that "the whole subject seems to be wrapped in a certain amount of obscurity." The fact that pulmonary tuberculosis is usually absent or that when it is present it is as a secondary affair was noted by the earliest commentators on the subject. Lartigau believes it to be primarily intestinal in origin. This recalls the statement of von Bering that the tubercle bacillus may be ingested as well as inspired.

SYMPTOMATOLOGY

Symptoms are somewhat indefinite. The earliest are usually dyspepsia, nausea and occasionally vomiting. Abdominal pain is often present. Diarrhea and constipation often alternate. In one of Pilliet's cases, diarrhea was persistent. The abdomen is often tympanitic and there is usually definite tenderness in the right lower quadrant. Koenig [6] summarizes the symptoms as "ballooning of the intestine, visible peristalsis, clapotage, borborygmi accompanying the colic and the appearance of an elongated tumefaction." This case has not progressed to the point at which such obstructive phenomena appear.

TREATMENT

Radical resection of the affected segment and intestinal anastomosis afford the only recourse. W. J. Mayo [7] reports several cases of ileocecal tuberculosis in which, anastomosis having been done preliminary to bowel resection, the patients apparently obtained complete relief, obviating the necessity of later resecting the affected segment of bowel.

That resection could not be done and subsequent microscopic evidence obtained in this case is unfortunate and renders my diagnosis vulnerable. However, I shall hope to present this later when and if the patient consents to the bowel resection.

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ABSTRACT OF DISCUSSION

DR. LAWRENCE REYNOLDS, Detroit: Dr. Garvin has given an interesting discussion of a rather unusual type of tuberculosis. Tuberculosis in the cecum and ascending colon and other parts of the large bowel is not infrequent in tuberculosis sanatoriums or even in office practice. Tuberculosis of the duodenum, on the other hand, is an extremely rare condition apparently and, if I judge correctly, Dr. Garvin believes this to be the first reported case. There have been a few other cases reported. Cohen reported a case in the *Medical Journal and Record* in 1928 in a boy, aged 15 years, who had symptoms for a long time simulating appendicitis. Operation was refused. The patient was seen again after nearly a year and a roentgen examination was made. In addition to the clinical signs in the right lower quadrant, the boy showed definite evidence of gastric pyloric obstruction, but the type could not be determined from the roentgen examination. When exploratory operation was made, a chronically inflamed appendix was found which was then interpreted as being tuberculous, as was also the obstructive lesion at the pylorus. It was impossible to resect the duodenum, but the glands about the duodenum and some of the tissue removed showed definite evidence of caseous tubercles, so that the diagnosis was determined entirely from glands taken in the proximity of the lesions, which parallels more or less the condition exhibited in Dr. Garvin's case. This patient a year afterward was well and without evidence of pulmonary tuberculosis. One other case that I found in the literature was reported by Buckley in the *U. S. Veterans' Bureau Medical Bulletin* in 1928. This patient was a Negro, aged 26, who had an extensive bilateral pulmonary tuberculosis, with evidence of intestinal tuberculosis. At autopsy a definite tuberculosis of the duodenum was found. The cases, however, are extremely rare. I believe that Howell, in making an analysis of 116 or 119 autopsies, found only 5 to present tuberculosis of the duodenum. The diagnosis of intestinal tuberculosis from a roentgenologic standpoint is of extreme interest. Dr. Garvin's case of tuberculosis of the duodenum will undoubtedly stimulate others to search for it, because, while it is infrequent, it must be a little more common than one is apt to think.

DR. L. T. LE WALD, New York: I have had one case of primary tuberculosis of the cecum. That is a point that ought to be emphasized. As I understand it, in Dr. Garvin's case there was no pulmonary lesion. My patient was a man who had had his appendix removed, and it shows the value of routine examination of every removed appendix because the pathologist immediately returned a diagnosis of tuberculosis of the appendix.

2. Lemon, W. S.: Intestinal Tuberculosis: III. Clinical Studies Relating to Diagnosis, Tr. Nat. Tuberculosis A., 1925, pp. 186-199.
3. Hartmann, Henri; and Pilliet, A. H.: Note sur une variété de typhlite tuberculeuse simulant les cancers de la région, Bull. Soc. anat. de Paris **66**: 471-476, 1891.
4. Lartigau, A. J.: A Study of Chronic Hyperplastic Tuberculosis of the Intestine, with Report of a Case, J. Exper. Med. **6**: 23-51, 1901.
5. Masson, J. C., and McIndoe, A. H.: Right Paraduodenal Hernia and Isolated Hyperplastic Tuberculous Obstruction, Surg. Gynec. Obst. **50**: 29-39 (Jan.) 1930.
6. Koenig, F.: Die stricturirende Tuberculose der Darmes und ihre Behandlung, Deutsche Ztschr. f. Chir. **36**: 65-81, 1892.
7. Mayo, W. J.: Personal communication to the author.

Lawrason Brown's work had just come out and I thought I would see if I could demonstrate whether the patient had tuberculosis of the cecum or not. He responded to the criteria that Brown and Sampson have given and Dr. Reynolds has just mentioned and as Pirie first observed: namely, the lack of filling of the cecum. The diagnosis was confirmed also by a barium enema, which showed rapid emptying of the cecum, so that I was able then to say that there was an area involving the cecum and extending up the ascending colon for a distance of perhaps 2 inches. With that definite knowledge, the surgeon, Dr. Downes, who had taken out the appendix, operated again and did a resection, putting the ileum into the transverse colon. The man made a perfect recovery and I watched him and roentgenographed him again for a period of about four years. He remained absolutely cured. It is now probably eight years and, as far as I know, he has had no further evidence of tuberculosis either in his digestive tract or in his lungs. I feel that this point of primary tuberculosis in the digestive tract should be stressed.

DR. JOHN DAY GARVIN, Pittsburgh: I forgot to say that Dr. Grier roentgenographed this young man about two years before I got him and noted a deformed duodenum and made a diagnosis of probable ulcer. There was nothing clinically to go with it and I didn't bear down very heavily. In the light of subsequent events, Dr. Grier's diagnosis was significant. I do not have the films to show because in the meantime Dr. Grier cleaned out his back films. I would like to emphasize and reemphasize, if I might, the fact that we are not talking about the ulcerative types of tuberculosis. This is a chronic hyperplastic type of tuberculosis of which, as I say, there are but eight cases reported. There may be some ulceration. Hardinghouse says there is only it isn't apparent. The big fact is hyperplasia, thickening of the wall and stenosis of the lumen.

TRICHINOSIS AND ITS OCULAR MANIFESTATIONS *

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The observations of the ophthalmologist are of invaluable aid in the diagnosis, treatment and prognosis of many systemic and neurologic diseases. This is particularly true in regard to examination of the eyegrounds and the perimetric fields. Although he could never hope to attain this enviable degree of diagnostic precision by external examination of the eye, certainly there are times when the external appearance of the eye and its adnexa will present some of the first evidences of a grave disorder.

In this category falls trichinosis, a most interesting parasitic disease which probably presents itself for diagnosis not infrequently. Because of its varied symptomatology trichinosis is, unless by chance, almost as frequently undiagnosed. This is evidenced by the comparatively few cases reported in the literature as against the observations of H. U. Williams,[1] who in 505 autopsies in which the disease had not previously been suspected found 5.34 per cent of trichinosis. That the ophthalmologist may in a measure alter these statistics it is hoped will be brought out in this paper.

Of the ocular signs and symptoms of trichinosis, by far the most spectacular and characteristic is that of chemosis of the bulbar conjunctiva. It is most singular that this striking ocular sign has heretofore been so inadequately emphasized. It presents a picture not likely to be confused with any other. Occurring bilaterally as a rule, in the first few days of the disease there is a chemosis of the bulbar conjunctiva of a pale lemon jelly appearance with only slight inflammatory reaction. The chemosis is limited to the conjunctiva overlying the external and internal rectus muscles, gradually fading out to the limbus. This pathologic picture is undoubtedly brought about by the early invasion of the rectus muscles by the trichinella parasite. In ten or more cases that I have seen, this sign was prominent in all but one case. Generally speaking, this incidence of occurrence is much too high since most of the cases were seen in an eye infirmary. It may, however, be conservatively conjectured that this characteristic conjunctival reaction can be seen in 50 per cent of the cases. Late in the course of the disease the percentage will be much less, since the chemosis often lasts but a week and has become absorbed at the stage of maximal involvement of the skeletal musculature. The mere presence of chemosis of the conjunctiva does not alone justify the diagnosis of trichinosis but should suggest to the observer other channels of investigation. Occurring concurrently with the conjunctival

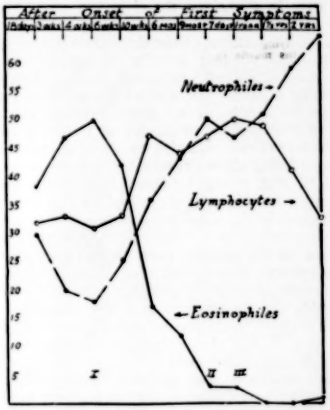

Fig. 1 (case 1).—At I, only minor symptoms of the disease had been present for the past two weeks; still, the eosinophil count continued to climb and the neutrophil count to fall; III is a confirmatory test of II taken seven days later.

chemosis will generally be seen an edema of the lids which later extends over the temporal and frontal regions and may finally involve the entire face. Painful movement of the eyes is frequently an associated and significant symptom. Exophthalmos, conjunctival ecchymosis, midriasis and retinal hemorrhages both superficial and deep are other ocular manifestations of the disease which occur with varying degrees of frequency.

Herrenschwand [2] has had the rare good fortune of examining the trichinella-infested eye microscopically at autopsy. In his observations the conjunctiva of the bulb and retrotarsal folds showed a marked round cell infiltration. There was a predominantly loosened structure of the epithelial cells of the conjunctiva which in many instances showed evidence of necrosis. Goblet cells were also seen to be in superabundance. The eye muscles were examined in section from the attachment of the ligament far into the belly of the muscle. In

* Read before the Section on Ophthalmology at the Eighty-First Annual Session of the American Medical Association, Detroit, June 26, 1930.

1. Williams, H. U.: J. M. Res. **6**: 64 (July) 1901.

2. Von Herrenschwand, F.: Arch. f. Ophth. **119**: 374, 1927.

all, a large number of fully developed and encapsulated trichinae were present. In contradistinction to their abode of predilection in the rest of the skeletal musculature, where they were found at the ligamentous attachment, here they were found mainly in the belly of the muscle and as far back as 11 mm. Otherwise the pathologic conditions were identical. The number of trichinae found in the eye muscles was impressively large and exceeded that found in the muscles elsewhere. The cornea and sclera were spared. The uvea presented no pathologic change except in the choroid. The vessels here contained an increased number of eosinophils as would naturally be expected from the general blood picture. The retrobulbar portion of the optic nerve showed a marked increase of the cells in the interstitial neuroglia tissue, and also an inflammatory infiltrative area in the adventitia of the central artery of the retina. The latter was well preserved and presented a few small hemorrhages, some of which were in the nerve fiber layer and others in the nuclear layer. Further there was found a row of characteristic round accumulations of cells particularly in the peripheral portions of the retina, several being found in the region of the ora serrata. These sharply circumscribed accumulations of cells lay for the most part in the two nuclear and outer plexiform layers, causing them to be displaced and bellied out from their normal positions. Several lay directly on the pigment epithelium of the retina in the layer of the rods and cones, projecting the external nuclear layer inwardly. The location of the accumulations of cells was determined by the position of the retinal capillaries; the character of the pathologic process was indicated by a proliferation of the cells of the capillary walls. The walls of the capillaries were at times thickened, hyalinized and dilated. In many of the accumulations an edema of the tissues was noted as well as a marked inflammatory infiltration with noneosinophilic leukocytes and lymphocytes. In part this made up the entire picture. In all, ten such accumulations were found, but this does not indicate their actual count since the sections were not all examined. In six, young trichinae were found.

Fig. 2 (case 2).—Chemosis of bulbar conjunctiva overlying both the internal and the external rectus muscle in each eye.

The ocular signs and edema of the face gradually subside, usually after the first week following their appearance. On the other hand the early general symptoms—malaise, constipation or diarrhea, gastritis, hyperpyrexia ranging from 100 to 105 F., and chills with profuse sweating—persist with a tendency to remissions. The migratory stage of the trichinella being now well established, generalized involvement of the skeletal musculature assumes a prominent rôle in the symptomatology. The more active muscles—tongue, extra-ocular, facial, diaphragmatic, intercostal and those of the extremities—are the earliest and most acutely involved.

Fig. 4 (case 2).—Edema over maxillary, frontal and temporal regions; proptosis of each eye, with extra-ocular movements limited and painful.

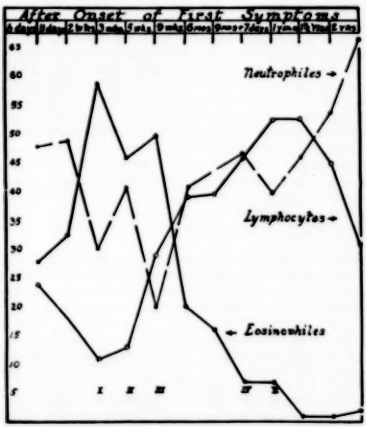

Fig. 3 (case 2).—At I there was a remission of symptoms with an elevation of the eosinophil and a lowering of both the lymphocyte and the neutrophil counts. At II the symptoms were most severe, giving a lowered eosinophil and an elevated neutrophil count. At III only a few minor symptoms persisted, the neutrophil count was at its lowest point and the lymphocyte count had returned to normal. V was a confirmatory test of IV taken seven days later.

Occurring early in the disease there is invariably an eosinophilia ranging from 10 to 80 per cent. In no other disease is this finding so constant or of such a high percentage. It is present almost at the onset of the first symptoms or even in the absence of any other sign or symptom indicative of trichinella infestation. Nor does the percentage or the length of time of the persistence of the eosinophilia give any indication as to the severity of the infestation. Thompson [3] reported a case in which the temperature was 105 F. and the white blood count 10,000, with 70 per cent polymor-

3. Thompson, W. G.: Am. J. M. Sc., August, 1910.

phonuclears, 20 per cent lymphocytes and 12 per cent eosinophils. During convalescence with a normal temperature the eosinophilia rose to 62 per cent.

As in the differential blood count, further burden of proof or confirmation of diagnosis falls on the laboratory in the demonstration of the trichinella larvae. This is most readily done by examination of a section of the affected muscle under the microscope. Since it will not always be found easy to obtain the patient's permission for such a procedure, the importance of examination of the blood for the offending parasite should be emphasized. Trichinella larvae are found in the blood stream during the period of migration from the intestinal tract to the affected muscles, which in one of the cases here reported extended into the fourth week from the onset of symptoms. They were first demonstrated in the blood stream by Herrick and Janeway in 1909 and were found to occur in 33⅓ per cent of the cases. At autopsy the larvae have been found in the pericardial fluid, in pleural exudates, and in the cerebrospinal fluid. The adult male trichinella has been reported to be found in the stools, but in only a small percentage of the cases.

That there may be a great variation in the time and character of the onset, duration and intensity of the symptoms, especially in a family outbreak, is well demonstrated by these cases in a father, son and wife who partook of broiled pork chops on the evening of Dec. 12, 1927:

REPORT OF CASES

Case 1.—Mrs. B., the fourth day following the eating of pork, awoke, December 16, with a slight swelling of the right eyelids and cheek, general malaise, aching of the entire body, and a feeling of feverishness.

December 17, the edema had extended into the left eyelids and cheek. The bowels became constipated and the patient had severe chills with profuse sweats. Lactation of the breasts ceased. A blood culture was taken.

December 20, the temperature was 102 F., the pulse 118, and respirations 24. The report on the blood culture was "no growth." The bowels were constipated and the patient appeared quite ill. The edema had now extended over the entire face, beneath the chin, and over each deltoid region. She had no desire for food and vomited twice. A quick laxative was effectual.

December 22, the temperature was 100 F., the pulse 90, and respirations 20. The patient was greatly improved and now was able to be up a short period during the day. The tendency to constipation persisted.

December 23, one week after the onset of symptoms, the patient complained for the first time of pains in the muscles of the legs and arms, which were described as cramps brought on when she started to walk, or to extend the legs while in bed. There were also various areas of edema and firmness of the skin, which were then considered areas of urticaria.

For an additional week the patient had a slightly elevated temperature, gradually improving generally. However, during this time and for several weeks thereafter she experienced rheumatoid pains in the muscles of the extremities, especially when putting them to use after an interval of rest.

Jan. 3, 1928, the patient was first seen by me, at which time she was apparently well. She complained only of occasional muscular pains. Examination showed a decided firmness of the deltoid and gastrocnemius muscles. There was no tenderness, pitting or discoloration of the skin. A blood smear was taken for a differential count (fig. 1). Microscopic examination of a centrifugated specimen of blood was negative for the presence of trichinellae.

Case 2.—Dr. B., December 23, eleven days after eating the pork, first noticed the beginning of a diarrhea and slight abdominal discomfort. The patient had previously been in good health. During the following few days these symptoms increased in severity with an accompanying headache, anorexia and general malaise.

December 28, the patient awoke with an edema of the eyelids which disappeared in a few hours. Although there were no definite muscular pains, he noticed that he was more easily fatigued than usual. An intractable diarrhea persisted.

December 29, I was consulted by the patient in regard to his eye condition, which he thought had resulted from the giving of alpine light treatments. His only complaint was of edema of the lids and conjunctiva. There was no photophobia, lacrimation or discharge. Examination showed considerable edema of the lids, especially the lower, and a characteristic chemosis of the bulbar conjunctiva overlying both the internal and the external rectus muscles in each eye (fig. 2). The corneas were clear; the pupils were equal and reacted well, and the fundi did not show any pathologic changes. The maxillary and frontal sinuses transilluminated clearly. The turbinates and mucous membrane of the nose were normal. No discharge was present. A tentative diagnosis of trichinosis was made. Mild mercurous chloride in divided doses followed by a saline cathartic the following morning was advised. A blood smear was taken for a differential count (fig. 3).

December 30, the patient awoke unable to open his eyes because of the increasing edema, which had now extended over the maxillary, frontal and temporal regions. There was quite evident proptosis of each eye, with extra-ocular movements limited and painful (fig. 4). Conjunctival chemosis had increased but no other ophthalmic signs were present. The temperature was 102 F.

Jan. 3, 1929, ten days following the onset of the symptoms, the patient's general condition was more serious; the ophthalmic signs remained the same. Blood was taken for a differential smear (chart 2). *Trichinella spiralis* was demonstrated in the centrifugated blood of the patient.

The patient's condition remained unchanged for several days with the temperature ranging from 100 to 104 F. in twenty-four hours. He had profuse night sweats, extreme diarrhea and prostration. Fluids sometimes to the extent of 2 gallons a day comprised the major part of his diet. A prescription of resorcinol, sodium bicarbonate, bismuth subcarbonate, heavy magnesium oxide and charcoal gave some relief of the gastro-intestinal symptoms.

January 8, eleven days after their first appearance, the edema of the lids and face together with the chemosis of the conjunctiva and proptosis were entirely gone. Extra-ocular movements were still painful, with some photophobia and severe frontal headache, especially after attempts at reading. Gastro-intestinal symptoms were lessened in severity but there still remained extreme general fatigue after the slightest exertion.

January 10 and 12 (the eighteenth and twentieth days of the disease), the patient experienced a most severe attack of painful respiration as a result of involvement of the intercostal and diaphragmatic muscles. One-fourth grain (16 mg.) of morphine sulphate was necessary for the relief of the pain and cyanosis. Ten cubic centimeters of blood was taken for examination. The laboratory report was positive for trichinellae.

Generalized weakness of practically all the voluntary muscles and pains in the lower extremity persisted for a further period of about three weeks, at the end of which time all signs and symptoms had gradually disappeared except for the abnormal blood picture (fig. 2).

Case 3.—Mr. B. did not note any untoward symptoms from eating the infested pork. This was explained at the time by the fact that the pork had been obtained from two different sources. However, a differential count of his blood several months later showed 4 per cent eosinophils, while on several occasions still later the count was normal or none at all were found.

COMMENT

A study of the blood in the first two cases was made at intervals over a period of two years, at the end of which time there was an entire absence of all the signs and symptoms of the disease. The eosinophil count was observed to be lowest during the acute stage of the disease, increasing with a remission of symptoms only to be reduced with each exacerbation. The neutrophil count was lowered in direct proportion to the increase

in the eosinophils, and vice versa. With a gradual return of the eosinophil count to normal there was a corresponding increase in both the neutrophils and the lymphocytes. Behr [4] made somewhat similar observations except that he observed, in contrast to these conditions, that the lymphocytes followed closely the curve of the eosinophils in their return to normal. Here it is seen that, following a grave depletion of the neutrophils, the stimulus for regeneration affected both the lymphocytes and the neutrophils. The proportionate recovery of the lymphocytic count was much the greater, reaching a stage of mild lymphocytosis and then gradually receding to the normal.

Blood Counts Taken over a Period of Two Years

	Dec. 29, 1927	Jan. 3, 1928	Jan. 7, 1928	Jan. 13, 1928	Jan. 26, 1928	March 1, 1928	June 10, 1928	Sept. 9, 1928	Sept. 16, 1928	Jan. 4, 1929	June 3, 1929	Jan. 5, 1930
Case 1												
Neutrophils	..	30	20	18	25	36	43	30	47	51	59	66
Small lymphocytes	..	24	28	29	31	40	38	27	23	24	31	25
Large lymphocytes	..	8	5	2	2	7	6	20	27	25	10	8
Eosinophils	..	38	47	50	42	17	12	3	3	0	0	1
Basophils	..	0	0	1	0	0	1	0	0	0	0	0
Case 2												
Neutrophils	48	49	30	41	20	41	44	47	40	46	54	67
Small lymphocytes	10	12	8	8	24	33	35	36	48	46	34	26
Large lymphocytes	4	6	3	5	5	6	5	10	5	7	11	5
Eosinophils	38	33	59	46	50	20	16	7	7	1	1	2
Basophils	0	0	0	1	0	0	0	0	0	0	0	0

The ease with which errors in diagnosis are made is well demonstrated in each of the cases that follow.

1. Mrs. B.'s condition was first diagnosed by her dentist as a "slight infection" of the maxilla and later by a consulting surgeon as septicemia following the extraction of a tooth.

2. Dr. B., after leaving my office, visited the office of another friend, who made the diagnosis of chronic nasal infection and acute conjunctivitis following alpine lamp treatments. He was seen the following day by an internist who was equally positive in the diagnosis of foreign protein sensitization.

3. Mr. B.'s case was undiagnosed, whereas had I made an early examination of the blood it would most probably have shown the eosinophilia of trichinosis.

Several methods of treatment have been suggested and tried with varying results. Algora y Nieto [5] reports prompt recovery in seven cases in which 0.45 Gm. of neoarsphenamine was injected intravenously two or three times. It is the opinion of most authors (Magath,[6] Schwartz, Alexander), however, that the treatment is as yet unsatisfactory. It seems quite logical that the administration of purgatives (mild mercurous chloride in divided doses and a saline cathartic the following morning) with the onset of the first symptoms will eliminate large numbers of the trichinae, with in turn thousands fewer of the larvae entering the blood stream. That it is impossible by this means to avert altogether the migratory period is well demonstrated in the second case reported, in which an intractable diarrhea was the first symptom.

SUMMARY

Two of the cases here reported demonstrated well the symptomatology of trichinosis. The one showed a conjunctival reaction characteristic of trichinosis which I believe is present in possibly 50 per cent of all cases. The other patient did not present this sign but might have had she been examined earlier in the course of the disease. The third case, if trichinosis, was asymptomatic.

Eosinophilia persisted for a period of from ten to twelve months with a subnormal neutrophil count extending over an even longer period of time. There was no apparent lowering of the patient's resistance to infections during this time.

Trichinella larvae were found in the blood stream. In one case they were found as late as the fourth week following the onset of symptoms.

The only dependable treatment of apparent value is early purgation.

78 Adams Avenue.

4. Behr, W.: Folia haemat. **36**: 25 (March) 1928.
5. Algora y Nieto, M.: Siglo méd. **73**: 157 (Feb. 16) 1924; abstr. J. A. M. A. **82**: 1232 (April 12) 1924.
6. Magath, T. B.: Minnesota Med. **9**: 558 (Oct.) 1926.

ABSTRACT OF DISCUSSION

DR. E. V. L. BROWN, Chicago: Dr. Carter has called attention to a thoroughly characteristic, diagnostic and heretofore unemphasized finding in trichinosis, namely, a lemon-yellow chemosis confined to the conjunctiva over the external and internal rectus muscles, found early in the disease and in something over half the cases, indeed, in all but one of the ten cases seen by him. The eosinophilia, invariably present and ranging from 10 to 80 per cent, should almost complete the diagnosis.

The ophthalmologist should therefore be a considerable factor in the early recognition of these cases, and if they occur in 5 per cent of people who come to postmortem, as reported by Mitchell, there must still be much trichinosis extant. To my knowledge I have never seen a case.

DR. F. H. VERHOEFF, Boston: My attention was first called to this condition of the bulbar conjunctiva by Dr. Parker of New York many years ago. It seems to me that both pathologists and the general profession have been slow to realize the importance of this symptom in trichinosis. We see a good many cases in the Massachusetts Eye and Ear Infirmary, and have learned to recognize it quickly. The condition is very characteristic. In the typical case there is congestion and a few little conjunctival hemorrhages over the rectus muscles, and in the marked cases there is more or less chemosis. I myself think that with this eye condition, elevation of temperature and eosinophilia one may be certain of the diagnosis and it is a waste of time to make any further examination, such as examination of an excised piece of muscle. While the organisms have been found in the muscles of the eye, I do not feel absolutely certain, as does the author, that their presence in the ocular muscles is the cause of the eye condition, for the reason that the latter occurs before there are any symptoms of involvement in the other muscles of the body. Many of these cases are very mild. I have no doubt that many pass unrecognized entirely, simply regarded as conjunctivitis, or edema of the conjunctiva, of unknown cause. I am sure that before Dr. Parker called my attention to them I had missed many of these cases, because I see so many now. Most of the patients do well. I do not think we have ever had a case in which death occurred. Some of them go through their courses without any especially alarming or unpleasant symptoms. In making the diagnosis one is helped if one gets a story of the patient having eaten pork and having had some gastro-intestinal disturbance previously; but even without this I think the condition of the eye and the eosinophilia justify one in making the diagnosis.

DR. T. B. HOLLOWAY, Philadelphia: Within the past few months three suspected cases have been seen in my service. Should such a case be first seen at the office, I believe it would be quite easy to overlook the possibility of trichina in the early stage. In the cases I have seen the chemosis was not excessive, but there was some edema of the lids with moderate bulbar injection and in one instance tiny punctate hemorrhages. Ocular rotations were painful. In the most striking case there was some cough but no definite pulmonary signs. The temperature was about 103 F. There was a high eosinophilia. Up to the time I last saw them, the cases were not definitely proved by finding the trichina.

Clinical Notes, Suggestions and New Instruments

PERFORATION OF THE CECUM BY A TOOTHPICK, SIMULATING ACUTE APPENDICITIS

SAMUEL McLANAHAN, M.D., BALTIMORE

Intestinal perforation and resulting abscess formation due to an ingested foreign body have been mentioned recently in THE JOURNAL.[1] An article by Bearse[2] focused attention on the subject. The two outstanding characteristics of the abscesses have been their slow development with consequent large size, and their location in connection with the large intestine. An exception was the duodenal perforation reported by Douglas.[3] The rectum is said to be the most common site for perforation by foreign bodies. A recent case coming to my attention presented rather different characteristics and offers another problem in differential diagnosis.

REPORT OF CASE

B. F., a man, aged 44, was admitted to the Union Memorial Hospital, April 20, 1930, under the surgical care of Dr. William A. Fisher, having been referred by Dr. Joseph W. Ketzky. On the previous day the patient had first noticed a dull pain in the right side of the abdomen; at times the pain increased in intensity. It had persisted for more than twenty-four hours but was unaccompanied by any nausea or vomiting. There had been a tendency toward constipation. On examination the temperature was 99.8 F.; there was marked tenderness over the right lower quadrant, accompanied by a moderate degree of muscle spasm; there was no mass on abdominal or rectal palpation. The leukocytes were normal and the urine was normal. A tentative diagnosis of acute appendicitis was made and immediate operation advised. Through a McBurney incision, the contents of the right iliac fossa were examined. Palpation of the cecum at once revealed the presence of a foreign object within its lumen, possibly a piece of wire. Evidence of a small abscess was seen along the lateral wall of the cecum. The appendix appeared normal and was removed in the routine fashion, the stump being inverted through a purse-string suture of fine black silk. Better exposure was at once possible and a small perforation in the lateral wall of the cecum could readily be seen. This led into a small abscess containing only a few drops of pus; subsequent culture yielded *Bacillus coli*. Projecting through the hole in the cecum was a foreign object, which on removal proved to be an ordinary toothpick. Cigaret drains were placed down to the site of the abscess and the wound was closed in layers. Convalescence was uneventful except for a rather prolonged healing of the wound. At no time was there any evidence of a fecal fistula. The patient had no recollection of having ever swallowed the toothpick.

COMMENT

The acuteness of the onset, the small size of the abscess and the location of the lesion are the striking points of this case. Obviously, an intraperitoneal perforation would be more readily noticed and diagnosed than an extraperitoneal one. This would account for the early acute symptoms, which were noted before the formation of a large abscess was possible. Such has not been the case with the slow-growing, large abscesses of the sigmoid area. Cecal perforations, because of their proximity to the appendix, will necessarily receive more prompt surgical intervention. A differential diagnosis, however, from an inflamed or ruptured retrocecal appendix would be a long chance. An interesting observation, previously made, and supported by this case, is that these patients are rarely conscious of having swallowed a foreign body, be it toothpick or fishbone.

Union Memorial Hospital.

1. Abscess from Swallowed Bone, Current Comment, J. A. M. A. **94**: 35 (Jan. 4) 1930. Durnam, D. C., and Bela, Ferdinand: Abscess from Swallowed Toothpick, J. A. M. A. **94**: 1830 (June 7) 1930.
2. Bearse, Carl: Fishbones as a Cause of Intestinal Perforations, New England J. Med. **201**: 885 (Oct. 31) 1929.
3. Douglas, John: Perforation of the Duodenum and Liver by a Fishbone, J. A. M. A. **95**: 265 (July 26) 1930.

ORAL APPLIANCE FOR RADIUM TREATMENT*

J. B. WILLIAMS, D.D.S., AND S. W. BUDD, M.D., RICHMOND, VA.

An implantation of radon seeds into the bony structures of the oral cavity is not always desirable. The limited amount of soft tissue in the alveolar ridge and the hard palate makes the interstitial use of radium very difficult and at times impossible. In these locations a surface application of radium is indicated.

Fig. 1.—Appliance in position in mouth of edentulous patient.

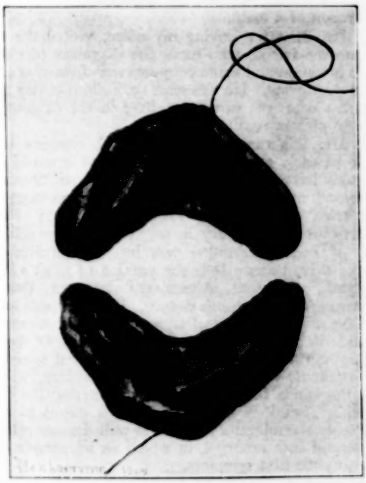

Fig. 2.—Upper and lower surfaces of appliance showing depressions to fit alveolar ridges and a deeper depression for retaining radium in a rubber container.

The great problem in oral applications is to get an applicator that will stay put. The movements of the tongue and muscles

* From the McGuire Clinic.

of deglutition will soon sweep ordinary applicators, such as forceps or pinch-cocks, from their anchorage. We experienced a great deal of difficulty in this regard until we commenced to use dental impressions made from a nonmetallic gum wax base. With them, we have been able to give treatments lasting over

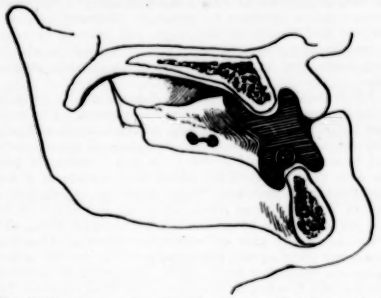

Fig. 3.—Cross-section of appliance in position with radium retained in exact position desired.

a period of hours without a great deal of discomfort to the patient.

The accompanying illustrations will serve to explain our appliance.

GALLBLADDER VISUALIZATION IN JAUNDICED PATIENTS *

HILLYER RUDISILL, JR., M.D., CHICAGO

It is quite generally believed that it is not desirable to advise cholecystography in jaundiced patients; in the first place, because nonvisualization usually results, and, in the second place, because the reaction to the dye may be unduly severe.

In the course of the past eighteen months, ten jaundiced patients have been seen among a group of some hundreds coming in a routine manner for cholecystography. In all except one of these cases, the examination has yielded useful information without ill effects to the patients.

Tetraiodophenolphthalein sodium is excreted in the bile by the liver shortly after intravenous injection, and diverted into the gallbladder by the action of the sphincter of the common duct, if the subject is fasting. The filling of the gallbladder seems to depend almost entirely on the occlusion of the common duct. Once inside the gallbladder, the bile and dye become concentrated by the absorption of water until the material is dense enough for roentgen visualization.

There is no contraindication to attempted gallbladder visualization in obstructive or extrahepatic jaundice.

In the hemolytic group, tests for liver function usually do not reveal much impairment.

The mechanism of occurrence of toxic and infectious jaundice is uncertain. It is usually thought to be caused by a combination of liver cell damage and cholangeitis. This is the only group in which there could be any theoretical contraindication to cholecystography. The so-called catarrhal jaundice is a member of this group.

In eight of the ten jaundiced patients submitted to gallbladder dye injection, the clinical diagnosis was catarrhal jaundice. In seven of them there was normal visualization of the gallbladder without evidence of stone, and in the eighth the gallbladder was not visualized. The ninth case, deeply jaundiced, presented a well visualized gallbladder full of stones (confirmed at operation). In the tenth case the gallbladder was not seen and at operation a carcinoma of the common duct was found.

The dye used was tetiothalein sodium (N. N. R.), 3.5 Gm., dissolved in 30 cc. of triple distilled water, sterilized and filtered according to the instructions supplied by the manufacturer. It was injected intravenously at 4 o'clock on the afternoon preceding the filming. Films were made with the patient prone on the Potter grid (*a*) about sixteen hours after the injection of the dye and (*b*) about one hour later and perhaps forty-five minutes after the taking of a drink containing chocolate, fresh egg and malted milk.

SUMMARY

Ten jaundiced patients have been submitted to cholecystography. In eight the gallbladder was visualized, in two it failed to be visualized. None of the patients have suffered an unusual reaction to the dye.

CONCLUSIONS

1. Jaundice is not a contraindication to the intravenous administration of tetiothalein sodium.

2. It is advisable to give intravenous tetiothalein sodium solution to jaundiced patients as a possible means of helping to differentiate the causes of jaundice.

* From the Division of Roentgenology, University of Chicago Clinics.

Council on Pharmacy and Chemistry

PRELIMINARY REPORT OF THE COUNCIL

SODIUM 2-OXO-5-IODO-PYRIDINE-N-ACETATE (INTRODUCED AS UROSELECTAN)

Sodium 2-oxo-5-iodo-pyridine-N-acetate (also designated as sodium-5-iodo-2-pyridon-N-acetate) has been introduced by Schering-Kahlbaum A. G. (Schering Corporation, distributor) for use in the radiographic visualization of the urinary tract under the proprietary name "Uroselectan." Since this name was tantamount to a therapeutic suggestion the Council recommended its replacement by an acceptable designation and accordingly the distributor is considering the adoption of the name Iopax, which the Council finds acceptable. The product is a definite chemical substance which promises to be an advance in the radiographic visualization of the urinary tract though its advantages, limitations and contraindications are at the present time not fully established. The product is suitable for experimental use by those who are versed in the technic of urologic examinations. In order to make available to physicians a concise and carefully considered statement of the introduction of the drug and the evidence for its use which is now available, the Council publishes the appended report prepared at its request by Drs. Bumpus and Braasch and extends at this time its appreciation to these investigators.

W. A. PUCKNER, Secretary.

REPORT ON SODIUM 2-OXO-5-IODO-PYRIDINE-N-ACETATE (INTRODUCED AS UROSELECTAN) TO THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION *

WILLIAM F. BRAASCH, M.D.
AND
HERMON C. BUMPUS, JR., M.D.
ROCHESTER, MINN.

The idea of visualizing the urinary tract by intravenous injection of some chemical substance containing iodine was first brought forward by Rowntree, Osborne, Sutherland and Scholl in 1923, by means of a publication in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. In their communication they demonstrated that the pelvis of the kidney, the ureter and the bladder could be rendered opaque to the roentgen ray by intravenous administration of solution of sodium iodide 10 per cent. Because of the toxicity of the drug in large doses and because of imperfect visualization of the renal pelvis in most cases, the method was not generally taken up by the profession.

In 1924, von Lichtenberg and Rosenstein repeated the work in conjunction with the perirenal pneumoradiographic method of Rosenstein. The same year Volkmann reported using the method, and in 1927 Lenardouzzi and Pecco published a report of their experience with it.

From 1921 to 1927, Binz and his assistant, Räth, synthesized seventy-three compounds of pyridine, with the idea of testing

* From the Section on Urology, the Mayo Clinic.

their germicidal properties in the urinary and biliary tracts when used intravenously. These they termed the "selectan" group of substances.

In 1928, Hryntschak, before a congress in Vienna, reported being able to visualize the urinary tract by intravenous injection of some substances the nature of which he kept secret. He published his work, with illustrations, in the *Zeitschrift für Urologie* in 1929 and demonstrated visualization of the urinary tracts of both animals and human beings. It has since been affirmed that these secret substances included sodium 2-oxo-5-iodo-pyridine-N-acetate but that he failed to obtain successful results in human subjects. The suppression of essential facts from Hryntschak's publication renders his work unsuitable for scientific evaluation.

Swick of New York, an American studying in Europe on a fellowship furnished by the Libman Foundation of New York, was asked by Lichtwitz, in the summer of 1928, to come to his clinic in Altona and study urologic cases. Binz had supplied Lichtwitz with some of the "selectan" group ("selectan neutral") of drugs to be tried in infections with cocci of the biliary and urinary tracts. Lichtwitz wrote (*Der Chirurgie* **2**: 357, 1930): "Auf Grund dieser Versuche und unserer ziemlich grossen Erfahrungen über die Unschädlichkeit der Präparate bei peroraler und intravenöser Darreichung schien die Anwendung der Selectane zur Kontrastdarstellung aussichtsreich. Herr Dr. M. Swick aus New York hat diese Prüfung durchgeführt. Ihm verdanken wir die Uroselectanmethode." (On the basis of these experiments and of our relatively extensive experience regarding the lack of untoward effects of the preparations by peroral and intravenous administration, the application of the Selectans as contrast mediums appeared promising. Dr. M. Swick of New York has carried out these trials. To him we owe the Uroselectan method.) The results on patients were promising, but the properties of the compound first used were not entirely satisfactory.

In the spring of 1929, after Swick had worked seven months at Lichtwitz's clinic, Lichtwitz advised Swick to continue his studies in Berlin. There he might have opportunity to take advantage of the extensive clinical material in the clinic of von Lichtenberg, and might be in a position to be in close relationship with Binz for the purpose of having the preparation perfected.

Von Lichtenberg expressed great interest in the results already obtained, encouraged Swick to proceed, and placed the necessary facilities at his disposal. Conferences with Binz and his associates led to the systematic trial of other substances of the "selectan" series, in the hope of avoiding the objectionable features of "selectan neutral." The compound which gave the best visualization and which had the least toxicity was found to be one of the "selectan" group of Binz, synthesized by him in 1927. It was named "uroselectan" by von Lichtenberg after its administration to patients had proved successful. The drug was then applied to a larger number of patients, under the direction of von Lichtenberg, and the work progressed sufficiently to permit of Swick presenting his work at the Urologic Congress in Munich in October, 1929. This work was published in the *Klinische Wochenschrift* (**8**:2087, 1929). Von Lichtenberg at the same meeting read a paper on its clinical application (*Klinische Wochenschrift* **8**:2089 [Nov. 5] 1929).

In the meantime, Roseno, at the German Surgical Congress, which met in April, 1929, reported having obtained successful roentgenograms after intravenous injection of sodium iodide and urea. In the hands of some, however, this substance was reported often to be associated with reactions too severe to permit of its general use.

When Swick returned to America, he reported his work before the Section on Genito-Urinary Surgery of the New York Academy of Medicine, Jan. 15, 1930, and published his paper in the *American Journal of Surgery* in February. After this, and before the drug was placed on sale in the United States, it was arranged by von Lichtenberg, through Alexander Randall, secretary of the American Urological Association, to have it distributed to twelve different clinics, gratis. Those who had used the material reported their results at the meeting of the American Urological Association in New York in June. These reports were followed by a consideration of its clinical application by von Lichtenberg and a report on the chemistry of the drug by Binz. Previous to this meeting, von Lichtenberg had demonstrated its clinical value by its use in about 700 cases.

The technic of administration is as follows: The preparation, which is a powder, is prepared for use by dissolving 40 Gm. in 100 cc. of sterile distilled water. This is twice filtered and is sterilized by autoclave, or water bath, as any solution for intravenous injection. The material is supposed to contain 42 per cent of iodine and it has left the circulation four hours after injection in cases in which renal function is good.

Administration is intravenous and is given with the solution at body temperature at the time of injection. The patient's face immediately becomes flushed, and tachycardia and palpitation occur. Patients experience a feeling of general warmth, and in more than half of the cases they complain of pain in the arm, near the shoulder, which they describe as a feeling that the arm is bursting. There is usually considerable dryness of the throat, and thirst, but water is withheld in order that the drug may be secreted in concentrated form. These symptoms usually pass off within ten minutes. Occasionally nausea and vomiting take place, and urticaria has been observed. Symptoms resembling acute iodism, manifested by lacrimation, sneezing and dyspnea, have occurred, but such reactions always have been transitory and delayed reactions never have been observed. After ten minutes from the onset of injection, untoward symptoms never have developed.

Roentgenograms are taken from fifteen to twenty minutes after injection, and again from thirty to forty minutes after the first roentgenogram. Before the second roentgenogram is taken, the bladder is emptied, in order that the shadow of the drug in the bladder will not obscure the lower parts of the ureters. If the first plates show that but little of the drug has been secreted, it is presumed that the kidneys are functioning poorly, and several hours should be allowed to elapse, during which plates should be made at intervals. Impairment of renal function will allow but poor concentration of the drug in the bladder and practically none in the kidney; many hours are required for its secretion.

This fact led Swick to develop a gravimetric method of determining renal function which can be applied to urine from each kidney separately if the ureters are catheterized but which is of more general application when used with urine from the bladder to indicate the function of the two kidneys together. This method as yet has not received sufficient clinical application for its worth to be determined.

The greatest field of usefulness for sodium 2-oxo-5-iodo-pyridine-N-acetate is in those cases in which the fact of the presence or absence of a second kidney is in doubt because only one ureter can be found by cystoscopic examination, or because retrograde injection of the ureter is prevented by stone or stricture. In such a case if the kidney on one side becomes visualized after intravenous injection of sodium 2-oxo-5-iodo-pyridine-N-acetate, and a pelvic outline is not seen on the other side, one is reasonably sure of the absence or of the extremely poor function of the kidney on the latter side.

Good visualization occurs, not only as a result of good renal function but also secondarily to urinary retention. Therefore, a dilated renal pelvis or ureter usually will be well outlined, although the function may be greatly impaired as the result of retention of the drug. This fact lessens considerably the usefulness of the drug in determining renal function by visualization. Its usefulness is lessened also by the fact that, in many apparently normal cases, visualization of the renal pelvis is poor; this is hard to explain, for a similar case in which injection is done with the same technic visualization may be good. Undoubtedly much improvement will be noted in the drug and its application in the course of the next few years.

As a substance for injection into the renal pelvis through the ureteral catheter, for purposes of pyelography, sodium 2-oxo-5-iodo-pyridine-N-acetate in the same dilution as that used for intravenous injection has proved the best material yet developed and seems certain to replace sodium iodide, as the latter replaced thorium compounds. Because sodium 2-oxo-5-iodo-pyridine-N-acetate is free from toxic effect, bilateral pyelograms can be made. If pyelovenous backflow occurs, the drug

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does not cause bodily reaction, and if retention in a hydronephrotic sac is discovered, irritation such as that which resulted from sodium iodide does not occur.

The drug has been used in America now for a sufficiently long period to allow of the assertion that its application is not followed by any alarming sequelae. Delayed manifestations need not be expected.

SUMMARY

As a substance for injection through the ureteral catheter, sodium 2-oxo-5-iodo-pyridine-N-acetate is the best material so far obtained; used intravenously, it often helps in the diagnosis when ureteral catheterization is impossible; however, it is not secreted in the same concentration by all kidneys of apparently equal function and hence is at times disappointing; as a substance for renal functional test, its worth is not yet proved.

PRELIMINARY REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING PRELIMINARY REPORT.

W. A. PUCKNER, Secretary.

AVERTIN

Avertin was submitted to the Council in February of the present year for its consideration.

The Council recognizes the fact that Avertin presents certain desirable properties but definite action concerning its recognition was postponed pending the result of investigations of certain of its side actions now being conducted. For the information of the medical profession the Council submits the following report concerning the present status of the drug:

Avertin is tribrom-ethanol, $CBr_3.CH_2OH$, a white crystalline substance. It was introduced in Germany by Willstaedter and Duisberg in the summer of 1926, to be used alone for rectal anesthesia or to be supplemented by other narcotics, including morphine and ether. It was supplied to a number of clinics, in which it was used experimentally. A superficial pharmacologic study of Eichholtz made in the laboratory of the manufacturers, and a clinical report by Butzengeiger were presented at the German Surgical Congress at Berlin in April, 1927. At that meeting Sauerbrook reported three deaths; Reischauer three; Melzner four; Druegg two; and Sievers one death, though Avertin is not blamed by them for all of these deaths. Following the severe criticism of Avertin by numerous surgeons at the meeting of the congress, it was temporarily withdrawn by the manufacturers.

The powder is soluble in about 30 parts of water at 40 C., but the aqueous solution is prone to decomposition, and some of the accidents attending its use were attributed to the decomposition products. The manufacturers claim to have overcome this tendency to decomposition by marketing Avertin in the form of a solution of which 1 cc. contains 1 Gm. of Avertin dissolved in amylene hydrate (tertiary amyl alcohol). The amount of amylene hydrate is not stated. This preparation was marketed in 1927 and has been the subject of several hundred reports. The testimony concerning Avertin is so conflicting that it is impossible at the present time to know precisely where to draw the line concerning its advantages and its disadvantages. This is especially true concerning its contraindications, about which there is no agreement, nor is there even an approach to an agreement concerning the proper dosage or the technic of using it in any of a great number of different procedures.

Avertin depresses the respiratory center, lessening both frequency and volume; it depresses the vasomotor center, causing a fall of blood pressure. The depression of the respiratory center is the more pronounced; but when it coincides with the depression of the vasomotor center, it increases the danger, especially when it is used with morphine and other accessory narcotics. Killian states that Avertin acts on the liver like chloroform. In 1928 he analyzed a number of reports of deaths from Avertin and concluded that Avertin injures the respiratory center more than chloroform or ether narcosis of equal depth. Killian severely criticizes Melzner, stating that the larger surgical clinics in general take a cautious attitude, some warning against it and some wholly denying its use. He reported that the drug had been tested with little discrimination by about one hundred surgeons, whose reports are often fragmentary and do not show precautions necessary for careful examination (Loewe, a pharmacologist, also reported adversely on Avertin). It may be added that the greater number of the reports up to the present time are of this character. Schwalbe in 1927 enumerated some twenty surgical and gynecologic clinics which refused to use Avertin on the basis of available reports or, having used it for a time, gave it up; and he also mentions ten clinics in which its use was given up or much limited on account of serious accidents. However, many other surgical and women's clinics have reported better results. Aside from the depression of the respiratory center and the vasomotor center, and the probable occasional injury to the liver, the principal objection to Avertin lies in the fact that anesthesia induced by it is not under control. This applies partially to so-called basis narcosis (also referred to as "basal anesthesia"), to which the manufacturers themselves are now inclined to restrict Avertin, apparently recognizing the dangers of complete narcosis with it. The manufacturers claim that amylene hydrate stimulates the respiratory center, thereby implying that this materially adds to the safety of Avertin. Few studies of amylene hydrate have been made, but Harnack and Meyer reported that the respiration is at first increased in rate and depth, and then gradually weakened up to paralysis of the respiratory center. They also reported that the blood pressure sinks slowly up to the point of death in mammals, that it paralyzes all parts of the central nervous system successively like alcohol, and that it paralyzes the heart muscle in the frog. In view of the work of Harnack and Meyer, which has not been disputed, it is misleading to maintain that amylene hydrate stimulates the respiration.

The advantages claimed for Avertin liquid include: 1. Absence of so-called psychic shock or mental distress (almost unanimous). 2. Absence of irritation of the respiratory tract with less postoperative bronchitis and pneumonia. 3. Absence of direct injurious action on the heart, kidneys or other organs, with the possible exception of the liver. 4. Convenience for operations about the face, especially when a cautery must be used. 5. Usefulness in long operations when deep anesthesia is not necessary. 6. Less frequent vomiting than after ether or chloroform. 7. Lasting sleep after operation, frequently making it unnecessary to use morphine for the relief of postoperative pain. 8. Amnesia. 9. Absence of injury after repeated administration (as in tetanus). 10. Rapid elimination (implying less toxic action). (It should be understood that publications concerning "Avertin" refer in part to Avertin alone, and in part to Avertin liquid containing amylene hydrate.) The disadvantages include: 1. Higher death rate than after ether. 2. Depression of respiratory center. 3. Depression of circulation. 4. Acidosis as actively as after chloroform. 5. Insufficient muscular relaxation in laparotomy (?). 6. Falling back of tongue, making constant observation necessary until the patient is fully conscious. 7. Lack of control from moment to moment (almost unanimous). 8. Want of exact dosage. 9. Narrow zone between anesthetic and fatal dose. 10. Disadvantages inherent in mixed narcosis. 11. Lack of adequate pharmacologic study of Avertin and its synergistic action with morphine, ether and other substances. 12. A lack of agreement concerning the indications and contraindications.

A preliminary report such as this can hardly be more than suggestive in view of the almost innumerable problems that are involved; but the foregoing presents the evidence concerning the drug which is at the present time available to the Council. Though the present evidence indicates that Avertin may prove valuable as a means of initiating narcosis (so-called basis narcosis) but not for complete narcosis, the Council decided not to admit the drug to New and Nonofficial Remedies: (1) until satisfactory studies of its properties, its advantages and its disadvantages have been made; (2) until the contraindications have been satisfactorily established; (3) until a generally accepted technic whereby it can be used as satisfactorily as ether has been established; (4) until the action of the amylene hydrate in Avertin liquid—whether by addition or by potentiation—has been determined and the amount declared; and (5) until the advertising has been revised to omit misleading statements contained in the present advertising and especially to recommend the product only for initiation of narcosis (basis narcosis) and not for complete narcosis.

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SATURDAY, NOVEMBER 8, 1930

AGRANULOCYTIC ANGINA

The first reference to agranulocytic angina seems to have been made in 1907, when Turk [1] called attention to the low granulocyte count in some cases of severe sepsis. The suggestion apparently did not arouse interest until 1922, when Schultz [2] described a number of cases which revealed an almost complete absence of granular cells associated with a group of symptoms and pathologic conditions which he declared formed a clinical entity. Later Friedemann [3] named this group of cases "agranulocytic angina." The features emphasized by Schultz were a high fever, occurring generally in elderly women with necrotic throat infections, rapid exhaustion, slight jaundice frequently, leukopenia with few if any granular cells but no involvement of the red blood cells or platelets, and death within a short time in almost every case. After Schultz's work became known, case reports began to appear in medical literature everywhere; now more than 150 cases have been recorded. In 1927, Kastlin [4] collected reports of forty-three cases and reported two more, with only three recoveries, a mortality of 93 per cent. Stomatitis was always present in these cases, necrotic ulcers occurring in the mouth, larynx or esophagus. Petechial hemorrhages were found in twelve cases at necropsy. In some of these cases there were high platelet counts but in others the counts were low. Nonreactive ulcers were found in the gastro-intestinal tract and in the female reproductive system. Because of the variations in the cases reported, Kastlin believes that agranulocytic angina is not a clinical entity. Moreover, numerous cases have been reported that vary even further from the original description. In some cases only a sore throat without ulceration, and the typical lack of granulocytes, are the diagnostic symptoms. Several investigators report an ulcer in the rectum or vagina without involvement of the throat, the clinical picture being otherwise the same. Blumer [5] reports a case beginning with numerous boils that became large abscesses, with the blood and the clinical course essentially the same as in the cases described by Schultz. Harkins [6] reports eight cases, four of which he considers to be agranulocytic angina and the other four of which he calls granulocytopenia. He classes one case as granulocytopenia because of the anemia and evidences of hemorrhagic diathesis, although it answers Schultz's description otherwise. Blanton [7] reports a case which he calls agranulocytic angina in which there was a staphylococcus abscess in the neck. One abnormally low granulocyte count was found and, after incision of the abscess, the count promptly returned to normal the next day. Farley [8] has collected reports of a series of cases following arsphenamine therapy, which had an agranulocytic period. It is clear that there may be a variety of conditions associated with the low granulocyte count. Obviously, they cannot all be called agranulocytic angina. Schultz's description would eliminate a number of cases which, except for the location of the ulcer, seem to have the same basis. Stocké [9] divides the cases into three different groups, one group answering Schultz's description, a second showing the presence of anemia, and the third evincing a tendency to hemorrhage. The name agranulocytosis, first used by Schultz, has been used by some as synonymous with agranulocytic angina and by others for differentiation. Only one condition appears common to all these cases, namely, the lack of granulocytes; therefore agranulocytosis or granulocytopenia would seem the most suitable name. While some cases may seem to fall into definite groups, so many cannot be classified that it would be too arbitrary to justify separation until other factors are discovered that will more distinctly differentiate the various types of cases.

Bacteriologic study has not yet given any clear-cut results. There are reports of a number of positive blood cultures, but the variety of organisms found has only added to the confusion. The organisms are, for the most part, various types of staphylococci and streptococci. Friedemann isolated *Bacillus pyocyaneus* from the blood stream once. Lovett [10] found the same organism in the throat and determined that the isolated organism caused a relative lowering of the granulocyte count in rabbits. Dasse [11] also found the organism in the throat in almost pure culture and verified Lovett's animal experiments. The blood cultures were negative in both cases. Vincent's organism frequently has been isolated from the throat, Harkins reporting it in five of his cases. Arsphenamine was used in several of his cases without apparent ill effects. Yet Farley's cases seemed to be due to the use of arsphenamine. Other throat cultures have shown a large variety of organisms

1. Turk, W.: Wien. klin. Wchnschr. **20:** 157, 1907.
2. Schultz, W.: Deutsche med. Wchnschr. **48:** 1495, 1922.
3. Friedemann, H.: Med. Klin. **19:** 1357, 1923.
4. Kastlin, G. J.: Am. J. M. Sc. **173:** 799 (June) 1927.
5. Blumer, George: Am. J. M. Sc. **179:** 11 (Jan.) 1930.
6. Harkins, H. N.: Granulocytopenia and Agranulocytic Angina with Recovery, Arch. Int. Med., to be published.
7. Blanton, W. B.: Agranulocytosis with Recovery, J. A. M. A. **92:** 2099 (June 22) 1929.
8. Farley, D. L.: Am. J. M. Sc. **179:** 214 (Feb.) 1930.
9. Stocké, Achilles: Folia haemat. **40:** 40 (numbers 1 and 2) 1930.
10. Lovett, Beatrice R.: Agranulocytic Angina, J. A. M. A. **83:** 1498 (Nov. 8) 1924.
11. Dasse, H. W.: Agranulocytic Angina, J. A. M. A. **91:** 1718 (Dec. 1) 1928.

that have been regarded as secondary invaders. In some cases in which a blood count has been taken early, a lack of granulocytes was found before the ulcerations appeared. Roberts and Kracke's[12] patient showed only 10 per cent granulocytes seventy-two hours before and no granulocytes the last twenty-four hours before she became ill. Cultures of the bone marrow have been taken by some workers but organisms were not found. The cases reported are endemic in character and there is no evidence of transmission by direct contact. One of the cases reported by Harkins as agranulocytic angina followed extraction of an abscessed tooth, a second case followed an abscess in the neck after tooth extraction, while a third case began one week after tonsillectomy. These, as well as other reports, indicate that some slight infection may in certain people precipitate the illness. Harkins finds reports of at least six cases presenting an abnormal granulocyte count prior to the onset of the illness.

Is granulocytopenia a new disease or were cases not recognized or reported before Schultz's description? Harkins has collected reports of about 150 cases from the literature with a mortality of 82 per cent. Reports indicate that patients without necrotic ulcers recover more frequently, which helps to account for his lower mortality. The reports also indicate that the ultimate prognosis of patients who recover may not be so good. There are at least five cases on record in which the patient seemingly recovered only to succumb to another attack in an interval of from three months to two years. All cases of agranulocytic angina should be studied exhaustively both clinically and bacteriologically if anything is to be known about the etiology. Lovett's work should be extended and attempts should be made to see whether a definite syndrome can be produced experimentally. At present it would seem that agranulocytic angina or, better, granulocytopenia is not a definite clinical entity but represents an indefinite group of cases resulting from some injury to the granulopoietic mechanism.

THE SEARCH FOR HEALTH

One of the most widely discussed addresses among the varied communications presented at the recent meeting of the British Medical Association at Winnipeg was the lecture of the distinguished English physician Dr. Robert Hutchison on "Mankind's Pursuit of Health." Starting with the thesis of G. K. Chesterton that "of all human things the search for health is the most unhealthy," he ventured the suggestion, perhaps ironically, that the old ignorance about the body and stolid resignation to its ills was probably a more "healthy" attitude, and certainly a happier one, than the modern curiosity and overanxiety.

Many physicians may read these pronouncements with mingled emotions. They doubtless agree with the arraignment of that overanxiety which develops hypochondriasis in regard to bodily well being and approve the censure of the numerous fads that are lauded by single track minds as the secrets of securing perfect health. Many of Dr. Hutchison's auditors and readers, however, wonder whether the laudation of a single universally applicable rule of health—moderation, the old universal secret of health—does not involve a condemnation of the choicest efforts of modern personal hygiene. The ridicule of calories and vitamins, of whole wheat and golf and "better baby" campaigns and what not sounds familiar enough. It is easy to make an audience laugh; but what is created out of the débris of destructive criticism is not infrequently almost as fatuous as some of the things that are assailed. Both the revolutionist and the reactionary deal as a rule with extremes of statement. They fail to recognize the middle course that sanity dictates.

Let us examine a few instances. Dr. Hutchison warned his hearers:

> Likes and dislikes should be listened to; they are nature's indications of what probably agrees or disagrees. As to "calories," our appetite was given us to tell us how much food we need and in health is usually a trustworthy guide. Leave raw vegetables, except salads, to the herbivorous animals and let the vitamins look after themselves.

Such advice would admittedly be sound if all of us were living in a garden of paradise where all of the earth's choicest dietary offerings were at our command. Unfortunately, the satisfaction of the demands of man is all too often limited by geographic, regional, climatic and particularly economic factors. War has taught us what all this may mean. The praise of appetite as a sole safe guide in all matters of diet overlooks the drunkard and the glutton. One may sympathize with the undue propaganda of exercise for health and counsel moderation; but is there a human instinct for "careful living"?

The country's greatest need was once described as a good five cent cigar. The summum bonum of the well reared person is described by our British colleague as character. "A country's greatest asset is character. Let us therefore cultivate character and let health look after itself, being assured that to a nation made up of men and women of character, all things, health included, will be added." Nothing is said about the effect of health on character; but one might venture a sally as to modifications that arthritis or hay-fever or perennial colitis might impose on it.

Science has been described as organized common sense. Shifting as the tenets of science may be, they nevertheless have made worth-while contributions. Calories have saved more than one deserving life; and vitamins have banished much human distress. The realm of scientific progress has given much that may be profitably promoted without detriment to character and with the occasional enjoyment spelled by good health.

12. Roberts, S. R., and Kracke, R. R.: Agranulocytosis, J. A. M. A. 95: 780 (Sept. 13) 1930.

THE BODY FLUIDS AND BURNS

The importance of the body fluids was recognized by Celsus something like twenty centuries ago. Yet it is within the lifetime of most practicing physicians of today that administration of fluid for its own sake has become a widespread life-saving measure. The reason that general recognition of this factor in treatment has been comparatively recent is probably that chemical methods were necessary before studies of metabolism could be exact and that investigations of water metabolism were consequently delayed. Rubner in Europe and Rowntree [1] in this country have given great impetus to investigation of the subject last mentioned. For the most part, the indications for restoration of lost fluids are well known. However, the rationale of the introduction of fluids in cases of burn, as recently emphasized by Underhill [2] and by Bancroft [3] is not so widely recognized.

Just as other injuries cause shock, so does a burn; but a condition of anhydremia also results, and this is of great significance, writes Underhill. If a burn involves one sixth of the surface area of the skin, the loss of fluid in twenty-four hours may equal 70 per cent of the total blood volume. Since Rubner has shown that in starvation an animal can live after loss of nearly all its glycogen and fat, half of its protein, and nearly half of its body weight, but that it dies from loss of one fifth of its water,[1] the fatal influence of the great loss in burns is apparent. With such depletion the blood becomes concentrated, the circulation slowed, and the blood loses oxygen. Partial asphyxiation results, metabolic processes become altered, the heat-regulating mechanism becomes impaired, the temperature falls, and vital activities are suspended. In the treatment of a burned patient, therefore, the burn itself is relatively unimportant at first. Even the clothing should not be removed. Attention to the all-important systemic effects of the injury should embrace, besides the usual measures against pain and fall in temperature, immediate intravenous administration of 1,000 cc. of physiologic solution of sodium chloride at a rate not greater than 25 cc. a minute. Thereafter fluid, particularly physiologic solution of sodium chloride, should be introduced by every available channel, in the amount of from 4 to 8 liters in twenty-four hours, until the capillaries have lost their abnormal permeability, fluids are retained, and the concentration of hemoglobin and of chlorides in the blood approach normal. Usually the critical period has passed in from twenty-four to forty-eight hours. Underhill is not concerned with toxemia. He doubts the existence of a specific burn toxin, and he has not seen symptoms of intoxication develop if his method of treatment has been employed.

Bancroft's treatment of shock is in general similar to Underhill's, including administration of fluid. However, he believes that toxemia is an important element and that whereas those patients who die within forty-eight hours succumb to shock, those who die in the period between forty-eight hours and three weeks are overwhelmed by toxemia. After the period of shock, therefore, his use of solution of sodium chloride is directed against toxemia and toward the maintenance of body fluids and blood chlorides. When the onset of toxemia is signalized by vomiting, he gives from 2 to 3 liters of "saline solution" a day; with marked vomiting, from 500 to 1,000 cc. of 2 per cent solution of sodium chloride subcutaneously, or 500 cc. of 3 per cent intravenously, very slowly.

Both authorities administer solution of sodium chloride within the first forty-eight hours after an extensive burn, and both administer it thereafter if necessary, although their reasons for doing so do not coincide in all respects. The important feature would seem to be that both place great reliance on the maintenance of body fluids and blood chlorides and that both are successful. Cases of burn, therefore, seem to be another field in which administration of solution of sodium chloride may be the means of saving life.

1. Rowntree, L. G.: The Water Balance of the Body, Physiol. Rev. **2**: 116 (Jan.) 1922.
2. Underhill, F. P.: The Significance of Anhydremia in Extensive Superficial Burns, J. A. M. A. **93**: 852 (Sept. 20) 1930.
3. Bancroft, F. W.: The Treatment of Cutaneous Burns, New England J. Med. **202**: 811 (April 24) 1930.

Current Comment

NONVOLATILE SUBSTANCES AS ANESTHETICS

Recently the Council on Pharmacy and Chemistry announced the acceptance of a barbital derivative for oral and rectal use as a preliminary to surgical anesthesia. Experimentally this product has also been administered intravenously as a means of inducing complete anesthesia or for partial anesthesia (to be completed by administration of a volatile anesthetic), and a considerable number of reports of such experimentation have been published. Such intravenous use is, however, far from safe; the Council therefore accepted the product only for oral or rectal use as a preliminary to surgical anesthesia. The manufacturer is not marketing the product for intravenous use. In this issue of THE JOURNAL appears a preliminary report of the Council on Avertin, which is tribromethanol. This substance has been proposed not only for initiating anesthesia but also as the chief means of inducing unconsciousness, to be supplemented when necessary by a small amount of an inhalation or local anesthetic. The Council concludes from a review of the evidence that Avertin may prove valuable as a means of initiating narcosis but that it is not proved to be a safe agent for complete narcosis, either by itself or combined with a volatile anesthetic. The Council holds that further study of the product is necessary. These two products illustrate a modern tendency in anesthetics set forth in the abstract of an article by Lendle [1] appearing also in this issue of THE JOURNAL. This tendency

1. Miscellany, p. 1451.

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is represented by the effort to find a nonvolatile agent for complete narcosis or, failing that, a nonvolatile agent to serve for so-called basal anesthesia, supplemented by the use of a volatile anesthetic. Lendle's paper seems to show that neither Avertin nor the barbital derivative "Pernocton" is a satisfactory solution of the problem. Safe and efficacious new methods of anesthesia may result from the modern work in this field; but all the evidence indicates that the products thus far proposed for so-called basal anesthesia are hypnotics or sedatives and should be used as such. They cannot be safely used for complete anesthesia and can be safely used in combination with other agents for the production of complete anesthesia only by those thoroughly experienced in the administration of anesthetics and closely familiar with the studies of the use of nonvolatile agents for anesthesia. Thus far their intravenous use must be considered unsafe.

PULMONARY ASBESTOSIS

In 1928 THE JOURNAL,[1] commenting on an article by W. E. Cooke,[2] suggested that pulmonary asbestosis, because of its dangers and its unique pathologic features, deserved more attention than had been accorded it. Two and a half years later Mills [3] reported the first case from the United States. His patient had worked in an asbestos mine in South America prior to 1898, had returned to the United States, and again had been employed in South America, this time in an unstated occupation, between 1911 and 1913. He died in Minnesota in 1929. The history of the case indicates that the asbestos which was found in the subject's lungs at necropsy was inhaled prior to 1898. If so, the profound pulmonary changes which evidently were induced by the asbestos, and which seemingly contributed to the patient's death, were present thirty-two years after the agent that caused them was introduced. Even if the exposure to the asbestos occurred at the time of the patient's later visit to South America, the pulmonary injury endured at least seventeen years. Accordingly, Mills has concluded that pulmonary asbestosis is an incurable disease, from which the patient may or may not die. The cause of death, if tuberculosis is avoided, seems to be pulmonary fibrosis with its indirect effect on the heart. At necropsy of Cook's patient, pulmonary fibrosis and evidence of extensive tuberculosis were found; it was not certain whether the fibrosis was due more to the tuberculosis or to the asbestosis. In Mills's case, evidence of tuberculosis was not found but the fibrosis was severe. The conjecture seems warranted, therefore, that asbestos is capable of producing two types of injury, somewhat as iron dust is capable of producing two types of pulmonary siderosis. According to Bohrod,[4] who cited the work of Hart, the red type of iron lung is found in persons who work in iron mines and in factories using certain iron pigments; pneumonoconiotic induration predominates and there is little tuberculosis. Metal grinders and polishers display the black type of iron lung; induration is less evident and tuberculosis is unrestrained. That siderosis and asbestosis are allied seems likely in view of the evidence that the iron-containing [5] portions of asbestos constitute the danger to health in the asbestos industry. Concerning the relation of physicians of the United States to this industry, Mills pointed out that asbestos is mined and manufactured in many parts of this country and that pulmonary asbestosis surely will be encountered. In England the workmen's compensation act has recently been extended to include this condition.[5]

1. Pulmonary Asbestosis, editorial, J. A. M. A. **90**: 119 (Jan. 14) 1928.
2. Cooke, W. E.: Pulmonary Asbestosis, Brit. M. J. **90**: 1024 (Dec. 3) 1927.
3. Mills, R. G.: Pulmonary Asbestosis: Report of a Case, Minnesota Med. **13**: 495 (July) 1930.
4. Bohrod, M. G.: Pulmonary Siderosis, Arch. Path. **10**: 179 (Aug.) 1930.
5. London Letter, J. A. M. A. **94**: 2078 (June 28) 1930.

INSENSIBLE PERSPIRATION AND BASAL METABOLISM

The estimation of basal metabolism has proved to be unexpectedly valuable as a diagnostic aid. The measurements of the respiratory exchange, which are now depended on to furnish the requisite information, have been greatly simplified in recent years, so that the procedure can be made applicable even in the office of the individual practitioner. There are, however, refinements of technic that ought to be applied more widely than they usually are. This refers particularly to the proper preparation of the patient and to the maintenance of strictly "basal" conditions. In the case of infants and children, obvious difficulties present themselves in the measurement of respiratory exchange as well as in direct estimations of heat output. Fortunately an alternative procedure has been proposed in the relatively simple method of ascertaining the insensible losses represented by perspiration. The determination of loss by insensible perspiration as an index of metabolism was discussed in detail in 1926 by Benedict and Root [6] in its application to adults. Its use in relation to children has been championed by S. Z. Levine and his co-workers [7] in the Department of Pediatrics of the Cornell University Medical College, New York. Basal standards of insensible perspiration were proposed by these workers in reference to the normal infant. The latest researches of Levine and Marples [8] have been concerned with the validity of the proposed methods and their basis of reference to predictions. A statistical study was made of the published data responsible for the standards at present available for the basal metabolism and basal insensible perspiration of normal infants. The investigation included consideration of the correlation between the two variables in simultaneous calorimetric measurements as well as in independent measurements with the respiration chamber and the balance. The evidence secured points to a high positive correlation between the physiologic mechanisms of heat production and insensible perspiration in the human subject.

6. Benedict, F. G., and Root, H. F.: Insensible Perspiration: Its Relation to Human Physiology and Pathology, Arch. Int. Med. **38**: 1 (July) 1926. Insensible Perspiration and Metabolism, editorial, J. A. M. A. **90**: 1629 (May 19) 1928.
7. Levine, S. Z.; Wilson, J. R., and Kelly, Margaret: The Insensible Perspiration in Infancy and Childhood: I. Its Constancy in Infants Under Standard Conditions and the Effects of Various Physiologic Factors, Am. J. Dis. Child. **37**: 791 (April) 1929; II. Proposed Basal Standards for Infants, ibid. **39**: 917 (May) 1930.
8. Levine, S. Z., and Marples, Eleanor: III. Basal Metabolism and Basal Insensible Perspiration of the Normal Infant: A Statistical Study of Reliability and of Correlation, Am. J. Dis. Child. **40**: 268 (Aug.) 1930.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts at 10 a. m. on Monday, 10:15 on Tuesday, and 10 on Saturday, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week is as follows:

November 10. Physical Education.
November 11. Eugene Field Poem.
November 15. Raising Cain.

Five Minute Health Talks may be heard over the Columbia Broadcasting System daily except Sundays and holidays, from 12 to 12:05 p. m.

The program for the week is as follows:

November 10. Where Do People Die?
November 11. In Flanders' Fields — Heroes of Medicine.
November 12. The Cigaret Causes a Stir.
November 13. Music in Medicine.
November 14. Music in Medicine.
November 15. Music in Medicine.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

COLORADO

Society News.—The Larimer County Medical Society was addressed, October 1, by Dr. James A. Matlack, Longmont, on "Publicity for the Physician," and by Dr. Magnus J. Stewart, Loveland, on "Aviation Eye Tests."——The Medical Society of the City and County of Denver was addressed, October 21, by Dr. Earl J. Perkins, Denver, on "Difficulties in Varicose Vein Injections."——Dr. Alfred H. Washburn has assumed the position of full-time director of the child research council of the University of Colorado School of Medicine and Hospitals.

CONNECTICUT

Society News.—The New Haven County Medical Society held its one hundred and forty-seventh semiannual meeting at Waterbury, October 23. Addresses were given by Drs. William H. Morriss, Wallingford, on "Value of Blood Cell Study in Pulmonary Tuberculosis," and William H. Glafke, New York, "Some Mechanical Factors in the Treatment of Digestive Disorders." The speaker at the dinner was Charles S. Clark, dean of the Yale Law School, on "Can Law Be Scientific?"

Dr. Rappleye Appointed Professor of Medical Economics.—Dr. Willard C. Rappleye, New Haven, has been made associate professor of medical economics at Harvard University School of Public Health for five years from February 1. Dr. Rappleye has been director of studies of the Commission on Medical Education, New Haven, since 1925, and previous to accepting this position had been professor of hospital administration at Yale University and director of the New Haven Hospital.

Dr. Fulton Appointed Professor of Physiology.—Dr. John Farquhar Fulton was recently appointed Sterling professor of physiology and head of the physiology department at Yale. Dr. Fulton is a graduate of Harvard and Oxford universities. He was awarded the Warren Triennial Prize by the Massachusetts General Hospital in 1925, then returned to Oxford as a fellow, where he conducted research on the central nervous system. Dr. Fulton is well known for his report on "Muscular Contraction and the Reflex Control of Movement." At Yale he will be particularly concerned with studies of personality in the Institute of Human Relations, where he will be associated with Drs. Joannes G. Dusser de Barenne and Engen Kahn, Sterling professors of physiology and psychiatry, respectively.

DELAWARE

State Medical Meeting and Election.—At the one hundred and forty-first annual session of the Medical Society of Delaware, October 14-15, at Dover, the program included papers by Drs. Gottfried Metzler, Jr., Bridgeville, on "Treatment and Prognosis of Abortion"; Carl B. Scull, Jr., Dover, "Exfoliative Dermatitis Following Use of Heavy Metals in Treatment of Syphilis"; Mark B. Holzman, Wilmington, "Value of Proper Diet in Prevention of Disease"; Samuel D. Earhart, Wilmington, "Differential Blood Count"; Arthur M. Shipley, Baltimore, "Suppurations Within the Chest"; John H. Stokes, Philadelphia, "Prevention of Infectious Transmission of Syphilis," and William F. Rienhoff, Jr., Baltimore, "Operative Treatment of Duodenal and Gastric Ulcer." Dr. Isaac J. MacCollum, Wyoming, delivered the presidential address. Dr. William Gerry Morgan, Washington, D. C., president, American Medical Association, gave an address. Dr. George C. McElhatrick, Wilmington, was elected president of the association, and Dr. William O. LaMotte, Wilmington, was reelected secretary. The next annual session will be held at Wilmington, Oct. 13, 1931.

GEORGIA

Society News.—The Fulton County Medical Society was addressed, October 16, by Dr. James L. Campbell on "A Clinical Study of Diseases of the Mammary Gland"; Dr. Bernard McH. Cline gave a clinical talk, illustrated, on "Endoscopy Under Local Anesthesia"; Dr. Rudolph A. Bartholomew presented a case report on "Pregnancy Complicated by Congenital Absence of Left Diaphragm."——The Second District Medical Society was addressed at Cairo, October 10, among others by Dr. George H. Noble, Atlanta, on "Cutting of Flaps in Amputation of Mammary Gland with View of Preventing Necessity of Skin Graft and Preserving Full Range of Arm Motion."——Dr. Samuel J. Sinkoe, Atlanta, addressed the Eleventh District Medical Society at Quitman on "Hematuria and Longevity," and Dr. Allen H. Bunce on diagnosis of abdominal conditions.

IOWA

Personal.—Dr. Wallace S. Petty, Sioux City, has been selected as director of the Woodbury County Health Unit; he has been director of cooperative health work with the Missouri State Department of Health. Woodbury County was the second unit in Iowa to adopt the full-time county health unit plan as provided under the permissive county health law. A total of $37,200 has been made available in Woodbury County for the establishment of a county health unit. It will be supervised by Dr. Erval R. Coffey of the federal public health service. The organization will cooperate with and supervise existing health and charity organizations in Sioux City and Woodbury County.——Dr. Daniel C. Steelsmith, who has been acting commissioner of health since the death of Dr. Henry Albert, was recently appointed state commissioner of health.

Society News.—Dr. Joseph C. Bloodgood, Baltimore, delivered a public lecture on cancer in Des Moines, October 17.——At a recent meeting of the Washington County Medical Society, Dr. Emmett T. Wickham, Washington, president, proposed the organization of a library for the use of members, and donated his private medical library.——The seventy-seventh annual meeting of the Dubuque County Medical Society was addressed, September 23, in Dubuque, among others by Drs. Nelson M. Percy, Chicago, on "Appendicitis and Intestinal Obstruction"; Clarence W. Baldridge, Iowa City, "Recent Development in Diseases of the Blood," and David A. Horner, Chicago, presented motion pictures on "Management of Breech Presentation."——Dr. John W. Kime, Fort Dodge, addressed the Hardin County Medical Society in Ackley, September 18, on "Light in Therapeutics."——The Polk County Medical Society was addressed, September 30, by Dr. Richard H. Jaffe, Chicago, on "Visceral Changes in Late Stages of Acquired Syphilis, with Special Reference to Syphilitic Aortitis."——Dr. Eugene F. Talbott, Grinnell, addressed the Poweshiek County Medical Society, September 18, on the thyroid gland.——The Des Moines Academy of Medicine and the Polk County Medical Society were addressed, October 28, by Drs. Walter D. Abbott and Lee Forrest Hill, both of Des Moines, on "Surgical Relief of Intractable Pain" and "Splenectomy in Children," respectively; the societies will be addressed, November 14, by Dr. Jay Arthur Myers, Minneapolis, on "Tuberculosis Among Children."——"Modern Treatment of Goiter" was the subject of Dr. Christian B. Luginbuhl, Des Moines, before the Audubon County Medical Society, October 2, and "Childhood Tuberculosis" that of Dr. John H. Peck, Des Moines.

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MICHIGAN

State Section on Dermatology and Syphilology.—Dr. Cyril K. Valade, Detroit, has been selected by the executive committee of the council of the state medical society as the first chairman of the newly created section on dermatology and syphilology. Dr. Valade is president of the Detroit Dermatological Society.

Society News.—Dr. Edward L. Keyes, New York, addressed a joint meeting of the Wayne County Medical Society with the Detroit Urological Society, October 21, on "Preventable Diseases in the Treatment of Prostatism."——Dr. Frederic Schreiber, Detroit, addressed the Wayne County Medical Society, October 28, on "Encephalography as an Aid in the Diagnosis of Brain Lesions."——The Oakland County Medical Society was addressed, October 16, by Dr. Loren W. Shaffer, Detroit, on common skin diseases.——Dr. Frank C. Yeomans, New York, will address the Academy of Surgery of Detroit, November 13, on treatment of carcinoma of the rectum and sigmoid.

University Society Meeting.—The University of Michigan Pediatric and Infectious Disease Society will hold a meeting, November 14-15, at the University Hospital, Ann Arbor. "Abdominal Pain" will be discussed by Drs. William D. Lyon, Akron, Ohio, and Thomas D. Gordon, Grand Rapids; "Nutritional Anemias" by Luvern Hays and Raphael Isaacs, Ann Arbor, and "Mental Hygiene" by Theophile Raphael, Robert R. Dieterle, Louis Schwartz and Willard C. Olson, Ph.D. Among others on the program will be Drs. Floyd H. Lashmet, Ann Arbor, "Tests of Kidney Function"; Raymond W. Waggoner, Ann Arbor, "Chorea," and Malcolm H. Soule, Sc.D., Ann Arbor, "Agglutination Reactions."

Internship Required by State Board.—The Michigan State Board of Registration in Medicine has recently issued a curriculum of intern work. The board requires that each candidate for a Michigan license must present a certified statement from an approved hospital that he has satisfactorily completed this curriculum of work during twelve months serving as an intern. Each hospital is to provide during the twelve months of residency of each intern six months' service in medicine and six months in surgery. He must report at a general staff meeting on either a study of any group of hospital cases or a report of research work done in the hospital. The intern is subject to a personal rating as well as a rating on history writing. The chief of staff of the hospital must certify in writing to the board that the intern has conformed to the schedule.

MINNESOTA

Supreme Court Upholds Basic Science Law.—The constitutionality of the basic science law was upheld by the Minnesota Supreme Court in the case of the *State of Minnesota* v. *Broden*. The defendant, an unlicensed healer, was arrested in Duluth in December, 1929, charged with practicing the healing art without a basic science certificate. He demurred to the information filed against him on the ground that the basic science law was unconstitutional. The demurrer was overruled and he appealed to the supreme court. The court, October 10, rendered a decision holding that the law does not violate any constitutional provision, either state or federal. This is the first time that a state supreme court has passed on the validity of a basic science law. Defendant Broden will now have to stand trial on the charges against him.

MISSOURI

Survey of Bottled Water.—The division of public health engineering and sanitation has started a survey of all bottled water supplies in the state. This will include a sanitary survey of the source of water sold in containers, method of handling, and bacteriologic analyses of samples. The survey is being made as a preliminary step to enforce state board of health regulations governing bottled supplies.

Society News.—Drs. George Wilse Robinson, Jr., and Elmer D. Twyman, Kansas City, addressed the Jackson County Medical Society, October 21, on "Use of Glucose Solution Intravenously in Neuropsychiatric Diseases" and "Surgical Treatment of Accessible Cancer," respectively.——The St. Louis Trudeau Club was addressed, October 2, by Drs. James L. Mudd on "Chest Surgery on the Continent" and Howard H. Bell on "Present Status of Calmette's B C G Vaccine for Tuberculosis."——Dr. Oscar Monroe Gilbert, Boulder, Colo., addressed the Jackson County Medical Society, October 18, on "Progress in the Management of Tuberculosis."

NEBRASKA

Society News.—The tenth annual meeting of the Seventh Councilor District Medical Society was addressed at Hebron, October 23, by Drs. William I. McFarland, Hebron, on "Treatment of Established Infection"; George W. Ainlay, Fairbury, "Fevers of Infancy and Childhood of Idiopathic Origin"; Charles G. McMahon, Superior, "Suture of Musculospiral Nerve," with case report; James E. M. Thomson, Lincoln, "Simple Therapeutic Procedures Applied to Certain Major Fractures"; Wesley C. Becker, Lincoln, "Treatment of Puerperal Sepsis"; Alexander A. Conrad, Crete; Eugene C. Foote, Hastings, "A Visit to India and Other Foreign Countries," with motion pictures, and Karl S. J. Hohlen, Lincoln, president, state medical society, "Practical Points in Diagnosis and Treatment of Common Brain Conditions," illustrated.——Dr. Arnold C. Blattspieler, Tobias, was host to the Saline County Medical Society, October 30, at a dinner; the program included papers by Drs. John Thompson on "Treatment of Various Gastro-Intestinal Disorders"; Harry H. Everett, Lincoln, "Basic Anesthesia in Surgery, Especially in General Practice," and William O. Colburn, Lincoln, "Acute Anterior Poliomyelitis"; among other guests was Dr. Karl S. J. Hohlen, president of the state medical society.——The Dawson County Medical Society was addressed, October 4, at Cozad by Dr. Adolph Sachs, Omaha, on diabetes.

NEW YORK

Hospital Accounting System.—An important accomplishment of the United Hospital Fund during the year was the organization of the New York Conference on Hospital Accounting, in which nearly 100 hospitals in the city have cooperated. The system consists of the development of uniform arrangements of accounting, the standardization of statistics and records, the establishment of a more equitable basis of distribution of the money which the fund raises for its members, and the launching of a university course in hospital accounting.

Plan to Measure Efficiency of County Societies.—Dr. William H. Ross, Brentwood, president of the state medical society, at a meeting of the Third District Branch, September 9, at Albany, discussed the extent to which county societies were carrying out the policies of the state society. The following activities promoted by the state society were considered: reporting meetings in the journal; giving courses in graduate education; making public relations survey; county laboratories; county tuberculosis hospitals and county public health nurses. The two societies having the fewest members reported the greatest number of meetings during the past five years, while societies having the largest membership and the most regular meetings had not made a single report of their meetings to the journal. Dr. Ross plans to chart activities of the eight district societies for publication in the state journal. The scientific program of the third district meeting consisted of talks by Dr. Max M. Peet, Ann Arbor, Mich., on "Head Injuries," and Dr. Burton J. Lee, New York, "Surgery and Irradiation in the Treatment of Cancer."

New York City

Hospitals Aided by Convalescent Homes.—According to a statement of the Hospital Information and Service Bureau of the United Hospital Fund in *New York Medical Week*, increasing importance is attached to the work of sixty-eight convalescent homes serving New York City on account of abnormal demands on hospitals through the current period of unemployment and business depression. The bureau notes increasingly heavy demands for free accommodations in hospitals, so that their facilities and budgets are seriously taxed. To help meet this situation, the work of the convalescent institutions is being stimulated and coordinated. The bureau serves as a clearing house for information about hospitals and for the receipt of applications for service in convalescent institutions.

Society News.—The program of the October 27 meeting of the Medical Society of the County of New York consisted of talks on puerperal mortality and its possible reduction by Drs. George W. Kosmak; John O. Polak, Brooklyn, who described the routes of infection following birth injuries, and John Whitridge Williams, Baltimore, who presented a clinical consideration of the deaths from puerperal infection that occurred in Johns Hopkins Hospital during the past ten years.——Dr. Frank Billings, Chicago, gave the first of a series of afternoon lectures to the physicians of Harlem, October 23, in the Association of Trade and Commerce Building, on "The Need and the Outlook for the Continuing (Postgraduate) Education of the Negro Physician in America." This is a part of the program for graduate medical instruction sponsored

by the North Harlem Medical Society.——The New York Roentgen Society and the New York Academy of Medicine were addressed at a joint meeting, October 20, by Dr. Coleman B. Rabin on "Pulmonary and Pleural Tumors—Correlation of Roentgenologic and Pathologic Findings"; demonstration of specimens and slides.——Dr. Foster Kennedy delivered the first of the series of afternoon lectures at the New York Academy of Medicine, November 7, on "Epilepsy and the Convulsive State"; the second lecture will be given by Dr. Frank H. Lahey, Boston, November 14, at 4:30, on "Carcinoma of the Colon," and November 21, by Dr. George Gray Ward, Jr., "Treatment of Pelvic Infections."

NORTH CAROLINA

Society News.—The Ninth District Medical Society was addressed at Salisbury, September 25, among others, by Drs. David S. Asbill, Statesville, on "Some Observations on Bronchoscopy," and Charles W. Armstrong, Salisbury, "Home Treatment of Tuberculous Children." Banquet speakers were Drs. James K. Hall, Richmond, Va., on "The Physician as Community Counselor"; John T. Burrus, High Point, "The Importance of Organized Medicine."——Among other speakers at the October 9 meeting of the Eighth District Medical Society at Greensboro, were Drs. Robert E. Smith, Mount Airy, "The General Practitioner's Aid to Nature in Obstetrics," and Marion Y. Keith, Greensboro, "Ramblings About Pellagra."

PENNSYLVANIA

Society News.—The principal address of the annual Mercy Day at Mercy Hospital, Pittsburgh, September 24, was delivered by Dr. Frank Norman Wilson, Ann Arbor, Mich., on "Cardiac Weakness and Cardiac Failure."——Dr. Robert A. Knox, Washington, addressed the Washington County Medical Society, October 15, on "Hypertrophic Stenosis of the Pylorus."

Personal.—Dr. Jacob P. Strayer, Oil City, was honored, September 26, at the meeting of the Venango County Medical Society on the completion of fifty years in the practice of medicine.——Dr. Henry E. Austin, Upper Darby, has been appointed by the District of Columbia commissioners chief resident psychiatrist at the Gallinger Hospital, Washington, which is a new position.

State Medical Election.—At the annual meeting of the Medical Society of the State of Pennsylvania, October 6, Dr. Ross V. Patterson, Philadelphia, was installed as president; Dr. William H. Mayer, Pittsburgh, was made president-elect, and Dr. Walter F. Donaldson, 8103 Jenkins Arcade, Pittsburgh, reelected secretary. The next annual session will be held at Scranton, Oct. 5-8, 1931.

Philadelphia

Dr. McKenzie Retires as Professor of Physical Education.—At the recent celebration of medical progress at the University of Pennsylvania, it was announced that Dr. Robert Tait McKenzie would retire as professor of physical education and physical therapeutics on the completion of a survey of student health. Dr. McKenzie will retain an affiliation with the university, his position to be announced later. He will devote most of his time to sculpture, in which work he is widely known. He was sculptor of the Franklin Statue at the university, the Scottish-American War Memorial at Edinburgh, and the War Memorial in the Parliament Building at Ottawa.

Dr. Tucker Becomes Professor of Bronchoscopy.—Beginning with the session of 1930-1931, Dr. Chevalier Jackson became emeritus professor of bronchoscopy and esophagoscopy in the Graduate School of Medicine of the University of Pennsylvania and consultant to the Graduate Hospital of the University of Pennsylvania. Dr. Jackson will continue his special courses of instruction in the Graduate School of Medicine. At the same time Dr. Gabriel Tucker, formerly associate professor, became professor of bronchoscopy and esophagoscopy in the Graduate School of Medicine and in charge of the Chevalier Jackson Bronchoscopic Clinic of the Graduate Hospital of the University of Pennsylvania. Dr. Jackson resigned from the University of Pennsylvania about a year ago to devote his time to the development of a bronchoscopic clinic at the Samaritan Hospital and to his professorship at Temple University School of Medicine.

Galen's Birth Commemorated.—The College of Physisions of Philadelphia held a meeting, October 23, to commemorate the anniversary of the birth of Galen, the greatest Greek physician after Hippocrates, and the founder of experimental physiology. Galen was the most voluminous of all ancient writers. After his death European medicine remained at a level for nearly fourteen centuries. Galen's work included nine books on anatomy; seventeen on physiology; six on pathology; sixteen on the pulse; the Megatechne, or therapeutics (fourteen books); the Microtechne, or practice, and thirty books on pharmacy. At the College of Physicians' commemoration, ninety-three copies of the ninety-eight Galen publications, the property of the college library, were on exhibition. The meeting was addressed by Drs. William H. Welch, Baltimore; Charles W. Burr, Philadelphia; Burton Chance, Philadelphia, and Giuseppe Franchini, Bologna, Italy.

TENNESSEE

Society News.—The Nashville Academy of Medicine was addressed, September 30, by Dr. Lucius E. Burch on "Uterine Bleeding." Dr. Rogers N. Herbert, Nashville, addressed the academy, October 21, on "Reflex Pain with Reference to Rectal Pathology."——Dr. James P. Taylor addressed the Bedford County Medical Society, September 18, on "Endocrine Disturbances."——"Duodenal Ulcer" was the subject of Dr. Estill E. Caudill, Elizabethton, before the Carter County Medical Society, September 2.——Dr. Charles E. Evans, Tullahoma, addressed the Coffee County Medical Society, October 13, on "Artificial Feeding of Babies."——The Davidson County Medical Society was addressed, September 23, by Dr. Jefferson C. Pennington, Nashville, on "The Significance of Urethral Discharge in the Male"; the society was addressed, October 14, by Dr. Barney Brooks, Nashville, on "Congenital Pyloric Stenosis."——Among others addressing the Knox County Medical Society, September 25, were Drs. Drew W. Luten, St. Louis, on "The Clinical Use of Digitalis," and William W. Potter, Knoxville, "The Eye as a Diagnostic Medium."——The Memphis and Shelby County Medical Society was addressed, September 2, among others, by Dr. Cecil D. Gaston, Birmingham, on "Etiology, Diagnosis and Management of Fistula in Ano."

UTAH

State Medical Election.—At the annual meeting of the Utah State Medical Association, September 10, Dr. William L. Rich, Salt Lake City, was installed as president; Dr. Richard A. Pearse, Brigham, was made president-elect, and Dr. Maurice M. Critchlow, Salt Lake City, reelected secretary. The next annual session will be held at Salt Lake City, Sept. 9-11, 1931.

VERMONT

State Medical Meeting and Election.—At the one hundred and seventeenth annual meeting of the Vermont State Medical Society in Burlington, October 2-3, Drs. Frank R. Ober, Boston, spoke on "Operative and Postoperative Treatment of Infantile Paralysis"; John F. Gile, Hanover, N. H., "Some Aspects of Pancreatic Surgery"; Mervin C. Myerson, New York, "Diagnosis and Treatment of Lung Conditions by Means of Bronchoscopy"; Clarence H. Beecher, Burlington, "Diagnosis and Treatment of the Cardiac Arrhythmias"; George H. Bigelow, Boston, "Can Communicable Disease Be Controlled?" and George R. Anderson, Brattleboro, "Hypertrophy of the Prostate from the Standpoint of the General Practitioner." A symposium on traumatic surgery was also conducted. Dr. William M. Johnstone, Morrisville, was elected president of the association for the ensuing year, and Dr. William G. Ricker, 31 Main Street, St. Johnsbury, reelected secretary. The next annual meeting will be in Rutland, in October.

WISCONSIN

Propose Compensation for Automobile Accidents.—An attempt will be made in the coming legislature to enact an automobile accident compensation law similar to the present industrial law. It has been shown that three times as many people are hurt in automobile accidents as in industrial accidents. The proposed law would provide that people killed or hurt in motor car accidents would get compensation regardless of the question of negligence. It is said that compulsory liability and insurance do not adequately meet the need for financial protection in auto accidents.

Society News.—The Third Councilor District Medical Society was addressed, October 17, among others, by Drs. James H. Mitchell, Chicago, on "Recent Advances in Diagnosis and Treatment of Malignancy of the Stomach," and Joseph L. Miller, Chicago, "Monilia Infection of Skin and Mucous Membranes."——Dr. Francis D. Murphy, Milwaukee, addressed the Winnebago County Medical Society, October 17, on cardiorenal disease with especial reference to hypertension.

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——The Chippewa County Medical Society conducted a symposium on the diseases of the gallbladder, October 14; among the participants were Drs. Joseph Gale and Ray C. Blankinship, Madison.——"The Current Attitude Regarding Epilepsy, Its Nature and Rational Treatment" was the subject of Dr. Albert W. Bryan, Madison, before the Marinette-Florence County Medical Society, October 9.——Dr. William B. Castle, Boston, addressed the University of Wisconsin Medical Society, October 23, on "Relationship of Achylia Gastrica to Pernicious Anemia."

CANADA

Changes at University of Western Ontario.—The following changes, among others, have recently been announced at the University of Western Ontario Medical School, London.

Dr. Henry Alan Skinner to associate professor of anatomy.
Dr. Madge T. Macklin to assistant professor of histology and embryology.
Dr. Russell A. Wand to associate professor of pharmacology.
Dr. John H. Fisher to professor of bacteriology.
Dr. Albert J. Slack to associate professor of public health.
Dr. Frank R. Clegg to associate professor of obstetrics and gynecology.
Dr. William P. Tew to associate professor of obstetrics and gynecology.

Society News.—A special study is being made by the eye, ear, nose and throat section of the Winnipeg County Medical Society cooperating with the department of health and public welfare, for the reduction and possible eradication of trachoma in Manitoba.——The Vancouver Medical Association was addressed, October 7, by Dr. Maurice F. Dwyer, Seattle, on "Interpretation of Gastric Symptoms," a clinical and roentgenologic study of 3,000 cases; Drs. James G. McKay and Arthur L. Crease, Essondale, B. C., addressed the society, November 4, on "Early Recognition and Treatment of Psychoses"; the speakers, December 2, will be Drs. Edward H. Saunders and N. E. MacDougall, "Early Recognition of Acute Mastoiditis" and "Treatment of the Common Cold," respectively.

Physicians for Rural Districts.—The problem of medical care in sparsely settled areas in Saskatchewan is being solved by the operation of the rural municipal act passed about a year ago. This gives every municipality the right to make a grant up to $1,500 annually to a legally qualified medical practitioner who is a resident or is easily accessible on call, or it may guarantee his income to that figure. The municipal physician must give free medical service to indigents and perform the necessary duties of a health officer. On demand of twenty-five taxpayers, the council must submit a by-law to the electors empowering the council to engage a physician for full-time service at a salary not exceeding $5,000 a year. Of Saskatchewan's 860,700 people scattered over 251,700 square miles, 14.4 per cent live in the eight cities; 7.7 per cent in the eighty towns; 2.9 per cent in unorganized territory, and 1.3 per cent are Indians on their reservations. This gives an extensive area needing medical service which now has little appeal to young physicians seeking to earn an immediate livelihood. Under this cooperative health measure, it is reported, there are thirteen rural municipalities paying medical grants of from $900 to $1,500 annually. Nineteen other municipalities have engaged municipal physicians at salaries varying from $3,500 to $5,000 a year. The system guarantees a reasonable income to the physician and gives the settlers a needed medical service.

Department of Public Welfare Created.—On recommendation of the Royal Commission on Public Welfare in Ontario, Premier Ferguson has announced the creation of a department of public welfare with Hon. W. G. Martin as minister. The commission advises that public funds finance the general hospitals, which now receive for indigent patients a grant of 60 cents daily per patient from the province, and $1.75 daily per patient from the municipality. The total general hospital revenue last year was $10,140,782. The commission emphasized the need of a government owned psychiatric hospital and to assist institutional schools in caring for Ontario's 6,000 crippled children, 2,000 blind and 3,000 deaf and dumb persons, recommended the division of the province into ten districts, in each of which will be stationed a graduate nurse or social worker supervised by a special government officer. It was recommended that the raising of funds to effect other recommendations of the commission should be patterned after the Quebec plan, in which more than $600,000 is raised annually by a hospital tax of 5 per cent of the cost of all meals over $1, levied in hotels and restaurants. Among the recommendations was one which advised that a special conference of medical men be convened to study cancer treatment and that the province establish a cancer hospital and purchase a supply of radium. Emphasis was laid on the need of preventive clinics, provisions for occupational training for convalescents, and aid in the rehabilitation of tuberculous patients on discharge.

GENERAL

Guides for Graduate Study.—The New York Academy of Medicine has published booklets to aid visiting medical men. "The Synopsis of Approved Opportunities for Postgraduate Medical Study in the Clinical Specialties" lists courses and residencies. "Opportunities for Postgraduate Medical Study Offered in New York City" has been revised to include a map showing important hospitals, facilities which the academy offers to visiting medical men, approved courses and residencies, fellowships, nonoperative clinics and conferences, clinical and pathologic conferences and ward rounds. Copies of the foregoing may be obtained from the New York Academy of Medicine, Fifth Avenue and One Hundred and Third Street, New York.

Posing as Physician's Son.—On July 28 a well dressed young man called at the office of Dr. William Gerry Morgan, Washington, D. C., and introduced himself as Charles Albert Perkins, Jr., the son of a classmate and close friend of Dr. Morgan. He stated that he had met with an automobile accident in Maryland, had been arrested and fined, and was in need of money to get him back to the Cleveland Clinic, where he was an intern. Dr. Morgan lent him $50, which he promised to return soon. Not having heard from him, Dr. Morgan recently wrote to the Cleveland Clinic asking if such a young man was attached to their staff. The reply came that there was no such young man there nor had there ever been one of that name.

Dr. Landsteiner Wins Nobel Prize.—Dr. Karl Landsteiner, bacteriologist and pathologist on the staff of the Rockefeller Institute for Medical Research, New York, has been awarded the Nobel Prize for Medicine. Dr. Landsteiner was born in Vienna, graduated at the University of Vienna in 1891, and was pathologist there from 1909 to 1919. He has been a member of the Rockefeller Institute for Medical Research since 1922. The prize amounts to about $48,000. The award was based on Dr. Landsteiner's research in connection with blood groups. He is known also for his research on infantile paralysis, paroxysmal hemoglobinuria, and blood serum in relation to immunity. The only other American to have received the Nobel Prize for Medicine was Dr. Alexis Carrel, to whom it was awarded in 1912.

New Veterans' Hospitals.—Sites for several of the nine new veterans' hospitals involved in the veterans' bureau construction program have been chosen. The hospital for Alabama will be located near Tuscaloosa; it is to contain 250 beds, will be erected at a cost of $1,100,000, and will include accommodations for a regional office. The hospital for western New York, to be located near Canandaigua, will have 400 beds and will be built at a cost of $1,700,000. The West Virginia hospital, with a 125 bed capacity and to cost $700,000, will be located near Huntington. The New Mexico Hospital will be a general hospital with 250 beds to cost $1,250,000 and will be located near Albuquerque. Facilities for the regional office and 200 beds for general medical and surgical patients will be provided for in the new hospital to be erected at a cost of $1,000,000 in New York City.

Society News.—At the annual election of officers of the American Protestant Hospital Association, October 20, in New Orleans, Dr. Benjamin A. Wilkes, Los Angeles, was installed as president.——Dr. Argus D. Willmoth, Louisville, Ky., was elected president of the American Physical Therapy Association at its annual meeting, October 9, and Dr. Cadwallader C. Vinton, 1650 Broadway, New York, reelected secretary.——Dr. John E. Jennings, St. Louis, was elected president of the Frisco System Medical Association at its annual meeting in Springfield, Mo., October 10-11, and Dr. Robert Vinyard, St. Louis, reelected secretary.——The first Mexican Congress on the Prevention of Blindness was held in Mexico City, November 1-6, under the auspices of the departments of public education and public health and of the National University of Mexico City. Papers were read on leprosy, cancer, tuberculosis, alcoholism, syphilis and the venereal diseases. The president of the congress was Dr. Daniel M. Velez.

LATIN AMERICA

Cancer Award Announced.—It was announced recently that the Uruguayan Association Against Cancer had voted an annual prize of 1,500 pesos for the best scientific study on human cancer, the award being made on the recommendation of a jury of six specialists appointed by the association. To

be considered, a work must be entirely original, representing an experimental study on the etiology, pathogeny, early diagnosis or treatment of the disease, and possess positive value as a contribution to knowledge on the subject. Any Uruguayan is eligible to compete for the award.

FOREIGN

Prize for Method of Detecting Mustard Gas.—The International Red Cross Committee at Geneva has announced that the international competition for the discovery of a reagent for the detection of mustard gas in the air, which was started July 1, 1929, is to close December 31. The prize offered is 10,000 Swiss francs (£400). Information concerning the competition may be obtained from the International Red Cross Committee, 1, Promenade du Pin, Geneva.

Investigation of Standardization of Drugs.—The governor general of India has appointed a committee to inquire into the extent to which drugs and chemicals of impure quality or defective strength are imported, sold or manufactured. The committee is to recommend legislative measures that would restrict the profession of pharmacy to duly qualified persons. It will visit important centers in the provinces to get evidence concerning drug standardization. The secretary is Lieut. Col. R. N. Chopra, I. M. S., School of Tropical Medicine and Hygiene, Calcutta.

Opening of Lockyer Collection.—The annual prize distribution and inaugural address at Charing Cross Hospital Medical School, October 4, was preceded by the opening of the Lockyer collection of obstetric and gynecologic specimens in the museum. The collection numbers nearly 2,000 specimens and is suitably housed in a large hall; it is the gift of Dr. Cuthbert Lockyer, consulting obstetric physician to the hospital. The gift, made in the centenary year of the school, is considered one of the most important collections that have been brought together by one person since the days of John Hunter, whose collection was said to be the basis of that of the Royal College of Surgeons.

Insurance Medical Service in England.—The extent and cost of insurance medical service in England for 1929 recently reported by the minister of health showed that 14,600 physicians were engaged in insurance practice. The number of insured persons entitled to medical benefit was a little over 14,000,000. The cost of their service was £8,666,000. Medicines and appliances were supplied as a part of medical benefit by about 9,000 chemists' shops. Of the total cost of medical benefit £6,256,000 were given to panel physicians and £1,922,800 was paid to panel chemists for the supply of drugs and appliances. About £200,000 was paid to country practitioners for mileage, that is, in practices in which the physical conditions were such that distances covered were not in themselves a fair measure of the physicians' difficulties. Nearly £10,000 was set aside to enable country practitioners to attend courses of graduate study and to provide them with facilities of telephones, motor cars and branch surgeries; £194,800 was allotted to physicians for medicines and appliances used in emergency treatment for their medicines dispensed in districts where patients were out of reach of chemists.

Rural Health Experiment in China.—Ting Hsien is a typical Chinese county selected for the health program to be financed by the recent donation of $50,000 by the Milbank Memorial Fund. The announcement follows closely on the news from Geneva that the League of Nations will support and cooperate in attempts to modernize China's health service despite that country's seeming preoccupation with civil war, her chaotic political situation and seriously disturbed industrial condition. The experiment is part of the Chinese National Association of the Mass Education Movement. It is of pioneer importance in applying modern scientific knowledge to a population which has an annual death rate of approximately 30 per thousand at an average expectancy of life at birth of only thirty-five years. Ting Hsien has one city of 80,000 population; sanitation is unknown and conditions of living are almost unbelievably primitive. Over 90 per cent of the people are illiterate. The mass of the population live in villages in mud huts. In the whole county of 400,000 people there is not a qualified modern trained physician.

Deaths in Other Countries

Prof. Henri Delagenière, LeMans, France, suddenly on September 30, in Royan, France; he had been known for work on osteoperiosteal grafts.—**Major General Sir Neville Howse,** minister of health and repatriation of the Australian commonwealth since 1925, in London, September 19, aged 67.

Government Services

Army Personals

Major Samuel E. Brown to duty at Mather Field, Calif.; Major Guy D. Griggs to duty at Kelly Field, Texas; Major Thomas L. Gore, in addition to his other duties is assigned as flight surgeon; Lieut. Ralph Vernon Plew to duty at the Walter Reed General Hospital, Washington, D. C.; Major John W. Watts will sail from New York for the Philippine Department about January 13; on arrival at Manila, he will report to the commanding general for assignment to duty with the medical corps; Lieut. Edward James Kendricks, to duty at Fort Leavenworth, Kan.; Major Robert B. Shackelford, Fort George G. Meade, Md., will proceed to his home and await retirement for the convenience of the government; Capt. John P. Russell, relieved at the Panama Canal, Canal Zone, and on completion of present tour of foreign service is assigned to Mather Field, California; Major James E. Ash will sail from New York about February 17 for San Francisco for duty in the Letterman General Hospital; Major Virgil H. Cornell relieved at San Francisco and assigned to duty at Army Medical School, Washington, D. C.

Surgeon General Ireland Reappointed

President Hoover has approved a recommendation of Secretary of War Hurley that Major Gen. Merritte W. Ireland be reappointed surgeon general of the army, effective October 30. This is the fourth appointment of Major General Ireland as surgeon general. In determining to permit him to finish his active army service in his present office, the President made an exception to the general rule against reappointments for the heads of branches and bureaus. General Ireland will reach the retiring age, May 31. He was first appointed surgeon general of the army, Oct. 30, 1918. He had previously served as chief surgeon of the American Expeditionary Forces and also as surgeon general. He was reappointed surgeon general, Oct. 30, 1922, and again, Oct. 30, 1926.

U. S. Public Health Service

Surg. William H. Slaughter, relieved at marine hospital, Cleveland, about October 10, and assigned to duty at Memphis, Tenn., in charge of the marine hospital at that place; Surg. R. L. Allen, relieved at Memphis and assigned to duty at marine hospital, Fort Stanton, New Mexico, in charge of the hospital; Acting Asst. Surg. J. E. Smith, relieved from duty at Knoxville, and assigned to duty at trachoma hospital, Rolla, Mo.; Surg. Herbert A. Spencer, directed to assume charge of the work at the immigration station on Angel Island, Calif., in addition to duties as medical officer in charge of the U. S. Quarantine Station at Angel Island; Medical Director Dana E. Robinson, assigned to duty in the office of the American Consul General, Quebec, Canada; Asst. Surg. Fred W. Kratz, assigned to duty at the U. S. Marine Hospital, Stapleton, N. Y.; P. A. Surg. Alfred J. Aselmeyer, assigned to duty at the Federal Penitentiary Annex, Fort Leavenworth, Kan.; P. A. Surg. William H. Gordon, assigned to duty at marine hospital, Key West, Fla.; Senior Surg. Friench Simpson, relieved at Oslo, Norway, and assigned to duty at Dublin, Irish Free State; Senior Surg. Randolph M. Grimm, relieved at Dublin, Irish Free State, and assigned to duty at Ellis Island, N. Y.; the following physicians were promoted and commissioned as passed assistant surgeons in the regular corps of the service: Hiram J. Bush, Houston G. Foster, Samuel J. Hall, Edgar W. Norris, Jr., Donald P. Ross and Aubrey E. Snowe.

The Government Needs Physicians

The U. S. Civil Service Commission states that government hospitals throughout the country, including those under the veterans' bureau, the public health service, Indian service, and other branches, are in need of medical officers and nurses of various grades, and that veterans' bureau hospitals have vacancies in positions of psychiatric social worker and junior social worker. Full information regarding examinations, salaries, and so forth, may be obtained from the U. S. Civil Service Commission, Washington, D. C., or from the secretary of the U. S. Civil Service Board of Examiners at the postoffice or customhouse in any city.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 18, 1930.

Report of Radium Commission

The appointment by the government of the radium trust and the radium commission has already been described (THE JOURNAL, Nov. 16, 1929, p. 1572, and Dec. 14, 1929, p. 1899). The radium treatment of malignant disease was considered so important that a fund of $1,500,000 was formed by public subscription and the contribution of $500,000 by the government. The body of national trustees which buys radium and controls its custody is the radium trust. Its work is directed by the radium commission, which makes arrangements for the equitable distribution and full use of this radium, both for treatment and for research. The trust and the commission have now issued their first annual report. March 31, the trust had 9,215 Gm. of radium, which cost $473,000. An agreement was made with the Union Minière du Haut Katanga for the purchase of radium at $50 a milligram, which is considerably below the current market price, in consideration of the fact that the trust was purchasing for a central national stock. The union also placed at the disposal of the trust a bomb of 4 Gm. on loan free of charge for three months with option of purchase. This bomb was purchased in February for $207,000. In March the commission recommended the acquiring of a supply of radium for the preparation of radon, for which 3 Gm. was bought. In the use of radium the commission has carried out a policy of concentration, restricting the distribution to places possessing a university with a medical school. Only one hospital—nominated by the medical faculty of the local university and approved by the commission—is recognized as the national radium center for the area concerned. Only in this way was it thought practicable to retain effective control over distribution and use, and experience has so far justified the decision.

SCHOOL OF RADIOTHERAPY

The commission considers that the need for a large number of physicians fully qualified to practice radiotherapy is at least as urgent as an increased stock of radium, and it has been much impressed by the lack of adequate facilities for the teaching of this all-important subject. One of its first preoccupations has therefore been the creation of a national postgraduate school of radiotherapy in London. It was evident that the scale, equipment and operation of an adequate center was beyond the resources of any existing teaching hospital, while, on the other hand, it was felt undesirable that the new school should have to wait for the projected empire postgraduate medical college or become absorbed in it. The commission came to the conclusion that the best solution would be the cooperation and, if practicable, the amalgamation of two existing institutions—the Mount Vernon Hospital at Northwood, Middlesex, and the Radium Institute in London. An arrangement has been made whereby the main clinical and pathologic work of the joint institution will be carried out at Mount Vernon, while the diagnostic and outpatient department, with a proportion of the surface therapy work, will be centered at the Radium Institute, which will also be the principle center for the supply of radon. The total amount of radium allocated to the joint center will be: Mount Vernon Hospital, 3 Gm. for clinical work; Radium Institute, 1 Gm. for radon. This will be in addition to the existing supplies of the two institutions. The postgraduate school has been inaugurated and a comprehensive course of instruction has been approved.

THE POSTPONED VERDICT ON RADIUM TREATMENT

The conclusion reached by the commission is that great caution is necessary in estimating the value of radium in the treatment of malignant disease and it deprecates the creation of false hopes by sensational and even optimistic statements. As a result of world experience extending over many years, the best that can be said is that some results under certain conditions are satisfactory while others, for no clearly established reasons, are less so, and that in a considerable proportion of cases the results are inconclusive or disappointing. But this does not justify a pessimistic outlook, as many problems yet unsolved may yield to experience and research. But time is an essential condition of success and only after several years of pioneer work can there be sufficient data for positive conclusions. The commission has therefore made its first duty to organize a concentrated and controlled national radium service, of which the progress and results will be recorded after a uniform system. Finally, the commission feels bound to repeat its warning that radium is not yet established as a "cure for cancer"; that while it holds out good promise of beneficial results, and certainly of alleviation of suffering, it is at present a dangerous weapon and one which, unless used with the greatest skill, care and caution, may easily be productive of more harm than good. This is the considered opinion of the commission as the result of its first year's work; but at least five years' further experience and coordinated research will probably be required before any final verdict can be anticipated.

A Survey of Population: Continued Decline of the Birth Rate

The registrar-general's statistical review for 1929, just published, shows that the estimated population of Great Britain and Ireland was 48,684,000, compared with 48,574,000 in 1928, an increase of 110,000, or 0.23 per cent. Taking the constituent parts of the British Isles separately, there was an increase in England and Wales and a decrease in Scotland and the Irish Free State. The estimated population of England and Wales in 1929 was 39,607,000, against 39,482,000 in 1928, an increase of 125,000, or 0.32 per cent. For Scotland the figures are 4,884,000 and 4,893,000, a decrease of 9,000, or 0.18 per cent; for the Irish Free State 2,943,000 and 2,949,000, a decrease of 6,000, or 0.2 per cent. The marriage rate for England and Wales during 1928 was 15.8 per thousand living and was the highest since 1921. The number of divorces was 3,396 against 4,018 in 1928, a decrease of 15.5 per cent. The birth rate was 16.3 per thousand of population, against 16.7 in 1928, thus continuing the steady fall of recent years. The proportion of male to female births was 1,043 to 1,000, a close approximation to that in recent and prewar years. The maximum was 1,060 to 1,000 in 1919.

Spahlinger Again

In THE JOURNAL, Dec. 15, 1928, page 1904, the concerted attempts in the press to boost Spahlinger's secret "cure" for human tuberculosis were described. The exposure of his pretensions by one newspaper, the *Daily Express*, seems to have stopped this. The paper sent a special correspondent to Geneva, who found that while a large income was being derived from patients at the Spahlinger Institute there were many failures, of which nothing was said in the roaring propaganda. Moreover, the *Express* offered to pay $50,000 toward Spahlinger's work on condition that he would allow a committee of experts to examine and report on it; but he refused. Then Spahlinger turned his attention to animals and promoted a company in this country for their treatment by means of his vaccines. Note that it is always in England, never in his native Switzerland, that Spahlinger tries to exploit his vaccines. He has bobbed up again in this country. This time he does not seem to have received any backing from the ordinary press, but the organ of the labor party, the *Daily Herald*, has a column devoted to his methods and adorned with his portrait and a microscope "in his laboratory." Under captions such as "Safe Milk" and

"Anti-Infection Hope for Babies," we are told that "experiments are being carried out with cattle on a Norfolk farm under a veil of secrecy. In about three months the experiments will be completed. Then it is likely that M. Spahlinger will issue a full report."

ITALY

(From Our Regular Correspondent)

Sept. 30, 1930.

International Congress on Malaria

The Second International Congress on Malaria was held in Algeria. Representatives from thirty-eight countries attended, and Professor Lutrario, president of the Commissione malariologica della Società delle Nazioni, was the head of the Italian delegation.

Before the section on parasitology, Dr. G. Raffaele of Rome spoke on the classification of the plasmodia found in birds. Owing to the impossibility of transmitting human malaria to animals, and by reason of the resemblance between malaria parasites of birds and those of man, research carried out with birds may be applied to man. The speaker was able to distinguish, in Italy, two types of plasmodia in birds—namely, *Plasmodium praecox* of Grassi and Feletti and *Plasmodium majus*, which was differentiated by Raffaele himself. Usually the two species are associated.

Before the section on entomology, Professor Franchini of Bologna presented a paper on the anopheline fauna of the Italian colonies.

Addressing the section on epidemiology, Drs. Missiroli and Hackett of Rome mentioned the spontaneous disappearance of malaria in zones surrounded by malarial territory and infested, at the time, with *Anopheles maculipennis*. The speakers, who have done research in various malarial localities, deny that the widespread use of quinine has suppressed the carriers of gametocytes. It seems plausible to assume that there has been a diminution in the relations between anopheles and man as a result of the increase in the number of stabled animals. Animals have an attraction for anopheles and thus they are diverted from man. It may be noted also that zoophilism in anopheles develops slowly, over a period of years.

In the section on clinical pathology, Mazzolani of Tripoli spoke on the relations between tuberculosis and malaria, and expressed the view that the relations vary with the stage of the tuberculosis and with the nature of the malarial infection. Sometimes a complete antagonism may exist between the two diseases.

Addressing the section on prophylaxis, Dr. Jandolo explained the new trends of Italian legislation in regard to health movements. Professor Lutrario spoke of the work of the commission on malaria of the League of Nations, which has made investigations and epidemiologic research in various countries, and has promoted the training of technical personnel in the schools of Hamburg, London, Paris and Rome. The speaker pointed out that Italy had shown great activity in the malaria crusade through (1) increasing the supply of the specific remedy by the governmental administration of quinine and the creation of plantations of Cinchona in Java and in Eritrea, (2) the training of technical personnel, and (3) the redemption of malarial regions by drainage.

The Death of Professor Fano

The death of Prof. Giulio Fano, senator, director of the Istituto di Fisiologia Generale of the University of Rome, at Mantua, his native city, September 27, after a brief illness, is announced. Born in 1856, he graduated at Turin at an early age and soon thereafter took up the study of physiology. When scarcely 28 years old, he was called to the chair of physiology at the University of Genoa. In 1894 he succeeded Luciani at the University of Florence, and in 1917 he became director of the Istituto di fisiologia generale at the University of Rome, which post he held up to the time of his death. He was the author of many works through which his name was known throughout the world. Among his chief works are those on coagulation of the blood and the behavior of peptonized blood and lymph; also on the inhibitory brain centers. His studies on the thyroid clats him among the pioneers in endocrinology. The work entitled "Brain and Heart," which has been translated into French and English, gives a series of lectures that Professor Fano held at the University of Barcelona, and contains an exposition of his principal discoveries in the field of physiology. He was founder of the journal *L'Archivio di fisiologia*, was a member of the Accademia dei lincei and of many other learned societies, and had received the title of "senator" (1911). Among his pupils may be mentioned Professors Bottazzi, Herlitzka, Ducceschi, Rossi and Spadolini, who occupy chairs of physiology in the universities of Naples, Turin, Padua, Florence and Siena.

The Records of Medical Aid to Children

The ministry of the interior has issued instructions that all institutions furnishing aid and sanitary prevention for the young shall cooperate in the defense against social diseases, especially tuberculosis. Aid shall be given not only to the larger communities but also to the rural districts. The point of departure of such activity shall be the medical examination of the children at an early date and repeated from time to time. For each child examined a record-book shall be made out, which must be kept up to date, with an account of diagnoses and forms of treatment and the results. Also statements in regard to accidents suffered must be recorded. In addition, for each child a so-called biotypologic record-card will be made out, the chief purpose of which is to follow the child through the various cycles of his development. A number of "official physicians" will be appointed to provide medical aid for the young.

Visit of American Physicians

About one hundred American physicians, members of the Postgraduate Medical Association of North America, visited recently the principal clinics of Rome and Florence. Some were general practitioners, some were surgeons and some were specialists. They attended lectures in Rome on surgery and urology, internal medicine, neuropathology and psychiatry, and the like, and participated in operative sessions in various clinics. They visited also the Mussolini institute for the prevention and treatment of tuberculosis and attended lectures and operations in thoracoplasty. From Rome they proceeded to Florence to visit the clinics at the university.

Compulsory Insurance for Health Officers

According to a recent law, the obligation of being insured in the Cassa di previdenza was extended (as of Jan. 1, 1930) to all health officers of the provinces and the communes. These physicians and their dependents are thus entitled to receive social and financial aid. Orphans of health officers are entitled to aid and to instruction in the Istituto per gli orfani dei sanitari, located in Perugia.

Latin as the Language of Medical Science

Prof. Cesare Orsali of Rome is carrying on a campaign in the medical press in favor of the adoption of the Latin language as the official idiom of medical science in all civilized countries. Professor Orsali has suggested that, in order to bring about a realization of this idea, an international medical congress be organized at which Latin shall be the sole official language, and that a medical journal employing only the Latin language be published, to which the scientists of all countries would be invited to contribute articles.

The Address of Dr. Rosenow

Through the initiative of the Federazione stomatologica italiana, Dr. Edward C. Rosenow of Rochester, Minn., delivered in the amphitheater of the Clinica odontoiatrica in Rome an

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address on "Clinical and Experimental Studies on the Selective Localization of Streptococci." Dr. Rosenow illustrated, with numerous lantern slides, the results of fifteen years of experimental work directed toward the reproduction in laboratory animals of disease of various organs, developing in consequence of intravenous injections of cultures of streptococci derived from foci of infection originating chiefly from devitalized human teeth. From these teeth, extracted from persons who were suffering from a distant focal infection and who were cured as a result of the extraction, cultures of streptococci were obtained. When injected into animals, these develop the same disease from which the patient suffered, as a result of the localization of microorganisms in the corresponding organs. These results throw light on the pathogenesis of certain obscure conditions and show the responsibility of the dentist, whose work, if not conducted with the proper asepsis, may provoke in the teeth conditions that are reflected in other organs, thus compromising the health of the patient.

Examinations for the Doctorate in Medicine

The faculty of medicine of the University of Milan has submitted to the ministry of public education a number of proposals pertaining to the practice of medicine and surgery. According to the present regulations, the university statutes may establish the number of subjects in which examinations must be taken by the student who is a candidate for the degree of doctor of medicine, but the plan of study is only advisory and cannot be flatly imposed on the student. The student has the privilege of selecting, from designated subjects, those that he considers best adapted for his individual purpose.

The faculty of medicine of Milan holds that this conception is not entirely applicable to medical studies, which are calculated to make professional men of the majority of medical graduates —men and women who are useful not only to themselves but also to society.

Since it will doubtless be some time before medical studies are reorganized, as they will probably be eventually, the faculty of medicine of Milan has suggested that special scholarly requirements be set up for those who, already in possession of a degree in medicine, wish to take the so-called state examination, which is required for the practice of the sanitary art.

BELGIUM

(From Our Regular Correspondent)

Oct. 7, 1930.

International Assembly of Army Medical Services

The Belgian government held at Liége, July 18-21, an assembly of the heads of the land, sea and air departments of the army medical corps of the world for the discussion of the two questions: (1) creation of an international bureau of bibliography pertaining to military medicine, and (2) advantages to be derived from an exchange of military physicians in peace times. The assembly passed the following resolution, which has been forwarded to the governments of all countries: 1. It is proposed that there shall be organized, under the control of the permanent committee of the international congresses of military medicine and pharmacy functioning in Belgium, an international bureau of medicomilitary bibliography pertaining to the land, sea and air forces, which shall be at the disposal of all official services, in accordance with regulations to be established by the permanent committee, in accord with the nations accepting this agreement; that these nations shall aid the functioning of the bureau by supplying it as generously as possible with the relative documents they possess, and, in particular, that they shall contribute toward the administrative expenses on the basis of the classification of nations adopted by the League of Nations. 2. It is further proposed that the nations accept and favor the international exchange of officers of the medical corps of the various land, sea and air forces. This exchange should be effected by means of short courses of instruction or by the sending of lecturers to foreign countries, in accordance with the forms decided on by each country that endorses the project. The international bureau of medicomilitary bibliography will be found of aid, in this connection, as a bureau of information.

The proposals are now being considered by the various nations, and the permanent committee of the international congresses of military medicine and pharmacy, which meets at The Hague on the occasion of the sixth congress, in June, 1931, will be called on to approve and to complete the organization and to adopt the mode of functioning of the medicomilitary bibliographic bureau.

Bacteria on Paper Money

Mr. Girard has an article in the *Bruxelles Médical* on the bacterial contamination of paper currency. From numerous researches, he found that, per square centimeter of paper currency, 2,000 germs develop on a gelose medium and 3,000 germs on a gelatin medium. Most of the bacteria obtained by culture are saprophytes: *Micrococcus prodigiosus, B. subtilis,* and germs belonging to the three groups *Megatherium, Mesentericus* and *Proteus;* but there are also pathogenic bacteria originating from the skin, saliva or intestinal tract of those who have handled the currency: *Staphylococcus pyogenes,* var. *ureus, albus* and *citreus, Micrococcus tetragenus, Leptothrix buccalis* and *Leptothrix asteroides* and *Bacterium coli commune.* Also spores of *Aspergillus, Penicillium, Mucor* and *Gladosporium* were encountered. Girard found no evidence of the bacilli of diphtheria or tuberculosis, or of pneumococcus, which require precise conditions for development. He studied the persistence on paper currency of germs deposited for experimental purposes. He gives, as the duration of survival, five days for the Koch bacillus, seven days for *Bacterium typhosum,* twenty days for the colon bacillus, forty-five days for the staphylococcus, and sixty days for the spores of anthrax.

Fourth Congress of Otoneuro-Ophthalmologic Societies

The fourth Congress of Otoneuro-Ophthalmologic Societies was held recently in Brussels, under the chairmanship of Prof. H. Coppez. Professor Brachet expressed in his inaugural address his pleasure over the federation of specialists. Terracol, Euziere and Pages presented a neurolaryngologic study on laryngeal paralyses. The diagnostic value of the laryngeal paralyses varies according as they exist in an approximately pure state or in association with more or less complex neurologic symptoms. Important characteristics point to the peripheral origin of a laryngoplegia: strict homolaterality, frequency of laryngeal anesthesia, muscular atrophy with disorders affecting reactions to electrical stimulations, association with the laryngoplegia of disorders pointing to nerve lesions or to multiple foci. To a bulbar seat of the causal lesion point more particularly: the apoplectiform onset, the motor disorders of the limbs of pyramidal or cerebellar nature, and the association of particular symptoms such as rotatory nystagmus, tachycardia and glycosuria. Suspicions of a radicular seat are awakened by the presence of laryngeal paralyses associated with symptoms pointing to involvement of multiple cranial nerves (outside of the nerves of bulbar origin). A trunk lesion may be considered in the presence of a laryngeal paralysis of slow development that evolves without the addition of other symptoms.

The laryngoplegias have likewise value for the determination of the etiology. In the disorders with a bulbar localization, the various diagnoses to be considered are essentially those of syndromes in a focus of vascular origin (preponderant rôle of syphilis), of syringobulbia, of chronic bulbar paralysis, of lateral amyotrophic sclerosis, of multiple sclerosis, of tumors,

of acute anterior poliomyelitis, of epidemic encephalitis. Furthermore, the laryngeal paralyses have likewise considerable prognostic interest. From the neurolaryngologic point of view, it is evident that the laryngoplegias of bulbar origin are the most important. Their appearance during a neurologic disorder requires reserved statements as to the future of the patient. In a general way, every laryngeal paralysis awakens suspicion of a lesion of bulbar areas whose functioning is indispensable for the existence of the subject (respiratory or cardiac center). Every subject with a neurologic disorder, in whom bulbar involvement is to be feared, should be subjected systematically to a laryngoscopic examination. The truth is, a laryngoplegia may remain clinically latent, and many surprises might be avoided if the neurologist would take advantage of the regular collaboration of the laryngologist. Inversely, disorders of the voice, if they do not prove to be an expression of a laryngeal paralysis, could be given a more favorable prognosis.

CAPE TOWN

(From Our Regular Correspondent)

Sept. 19, 1930.

Vital Statistics

The bureau of census and vital statistics annually issues reports, which are usually condensed in the year book of the Union, the official government summary of what has happened during the past year. For many years the profession has felt that the basis on which the vital statistics of the Union are tabulated is wrong. That basis makes a distinction between European and native and between colored and native, with the obvious result that the percentages given are not correct. The latest figures of the Union give the European population as 1,738,937, as compared with 1,280,381 in 1911. The coastal areas are slightly more densely populated than the inland areas. The European birth rate is 25.8 per thousand of population, having dropped from 32.5 in 1910, and is lowest in the urban center, which is in some ways the least South African and receives the highest influx of new blood. The European birth rate is high when one compares it with that of Canada or England and Wales, and the rate of natural increase, the excess of births over deaths, is three times as great as that of England and Wales. In 1928 it was 15.6 per thousand of population. The European death rate is 10.15 per thousand and is 5 per cent higher than the average for the previous five years, an increase thought to be due to the increase in the number of persons in the higher age groups. The infant mortality rate was 70.5 per thousand European births, and appears to be stationary, but is 22 per cent below the average rate for the five years 1910-1914. The puerperal mortality rate is 5 per thousand European births, which is almost as high as that for England and Wales, and corresponds with that for Canada (5.5) and Germany (5.2). These figures give a thoroughly false conception of the real vital statistics of the Union. The larger part of the population is composed of aboriginal natives, while there is a section, growing in numbers and importance, of half castes, locally known as Cape coloreds. The death, infantile and puerperal mortality rates among these two classes are much higher than the figures here given, and probably much higher than the calculated figures sometimes quoted. But no one seems to mind. The central government has gone on dealing with public health matters as if these concerned merely the European part of the population. As a matter of fact the European population is so small, and in the urban areas it is so well looked after by thoroughly competent medical officers, that the central health administration might with advantage concentrate on the native and colored population. The published statistics are so inadequate that few realize how widespread is disease and deterioration among the white as well as among the native population. For political reasons this is denied, and politically everything possible is being done to confirm the South African in his belief that he can continue to be the predominant partner even without importing new blood and new strains into the Nordic population.

Medical Inspection of Schools

This tendency to underrate the importance of native health is well seen in the report of the medical inspectors of schools for the Cape Province. Although thousands of native children attend schools in the province, the medical inspectors confine their inspections almost wholly to European children. They report that 36 per cent of European children are defective but state emphatically that the defectiveness among such children is not higher in the province than elsewhere among civilized communities. Their figures have been challenged by former medical inspectors of schools, now in consultant practice, who point out that the figure of 18 per cent dental defectiveness is ludicrous, and that former inspections in the Cape Province gave a much higher general average of defectiveness. The real reason for this low figure is not that physical defectiveness is less prevalent in the Cape Province than it is in the Transvaal or in Natal but because in the Cape alone the medical inspectors follow the antiquated method of examining age groups only, instead of examining all the children, and devoting special attention to entrants and leavers. It is among the leaver group that the defects which militate most strongly against the economic usefulness of the child are found. Taking the Union as a whole, one may say that the prevailing defects found in leavers are remediable defects due to underfeeding or infection. Antenatal underfeeding and antenatal infection are responsible for much of the endocrine and pluriglandular insufficiency. Juvenile underfeeding and infection accounts for approximately one third of the defects discovered in leavers. While in the north malaria, bilharzia and malta fever and, perhaps, ciliate, flagellate and amebic infections produce much defectiveness, the main causes of defectiveness in the Cape Province are probably the same as those in Europe. Rheumatic fever and rickets do not, however, occur in the same relative proportion as they do in Europe or America. Rickets is more rare and occurs chiefly among the colored half castes. Rheumatic fever is probably the most prevalent juvenile disease, and its manifestations are sometimes so common as to raise the suspicion that there is a mild epidemic. Chorea and heart disease, resulting from rheumatic fever, are common enough.

Postinstitutional Care

Only recently has the public discovered that in many of these cases of juvenile defectiveness prolonged postinstitutional care is necessary. Our hospitals make no provision for such intensive convalescent treatment. So far only one proper "school of recovery" has been established. This is at Isipingo in Natal, and is mainly designed to receive children suffering from chronic malaria, who remain in the home for six months or longer and receive, while there, class instruction and clinical treatment. The home is able to deal with a few hundred children a year, but obviously the number of chronic malaria children needing institutional treatment is much greater than can be accommodated by one such school. Lately the Transvaal education department has established temporary treatment camps for the clinical treatment of bilharziatic children. The success obtained in these camps is striking, and the publicity given to them has stimulated the public to clamor for something similar for orthopedic and heart cases. A movement has now been set on foot to establish the Princess Alice School of Recovery at the Cape. Unfortunately the organizers have selected a spot some distance away from the sea, and it is possible that the difficulties of dealing with a site that permits of no adequate drainage and needs the installation of a septic tank will wreck the scheme. At present there is one cripple home in the Union, but there are several good establishments for the blind and for the deaf and dumb, while the government has founded two excellent institutions for juvenile feebleminded patients. So far only the fringe

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of the problem of the chronic sick has been touched, and so long as hospitalization remains in the hands of the provincial authorities, without adequate funds for proper organization, it is unlikely that the much wanted improvements will be forthcoming.

Deaths in the Profession

South Africa is greatly understaffed with physicians, there being about 1 for every 4,000 people. Our annual recruitment from the universities is approximately 25, and nowadays, contrary to what occurred before 1910, we obtain comparatively few physicians from the outside. The loss through death among our practitioners is relatively large. Last month, for example, seven died, only three of them being seniors in the profession. Among these the oldest, though perhaps not the best known, was Dr. D. B. Logie, who had qualified in 1873 and had been practicing in this country since 1878. He had been in bad health for several years and since 1902 had practically given up practice. Dr. R. Mackenzie of Johannesburg was a better known practitioner and our foremost authority on hospitalization. He was for years medical superintendent of the Johannesburg Hospital. On his retirement under the age limit, some years ago, he devoted himself to consulting dermatologic practice and quickly established a large consulting practice. His death, unexpectedly, from a subphrenic abscess came as a shock to the profession, which he had served for many years as member of the medical council, examiner, and member of the federal council of the medical association. Among the more junior members of the profession whose deaths are recorded are Dr. P. H. Henson of Fort Victoria, Southern Rhodesia, and Dr. A. C. Harrison. The latter was well known as an assayer and metallurgist before he took up medicine, and his brilliant academic career foreshadowed an equally successful professional activity, which has been cut short by his sudden and untimely death. Other medical men whose deaths are recorded this month are Dr. Redelinghuys, Dr. Kennedy, Dr. Kitchin and Dr. J. A. Kennedy, all well known general practitioners.

NETHERLANDS

(From Our Regular Correspondent)

Oct. 7, 1930.

Smallpox Vaccination in Infancy

As a result of studies by the investigating commission, to which reference was made previously (THE JOURNAL, July 26, p. 280), the public health service sent a circular letter to all physicians of the Netherlands, calling attention to the advantages of smallpox vaccination during the first year of life. Statistics have shown that, during the first twelve months of life, postvaccinal encephalitis develops much less frequently. Furthermore, the local accidents of vaccination are much less when vaccination is applied during the first year of life. The periods most favorable for vaccination are May and December. Children who have not fully recovered from an infectious disease, and likewise children who are living in an environment in which infectious diseases have recently occurred, should not be vaccinated as yet. The circular letter concludes with an appeal to the physicians of the Netherlands that they adopt this method, as it is the only method that will afford protection against an epidemic of smallpox and that will, at the same time, reduce the dangers of encephalitis.

Aid for Tuberculous Employees

Dr. Jitta sent recently to the International Bureau of Hygiene a communication on the various aspects of the crusade against tuberculosis in the Netherlands. 1. The Netherlands does not have compulsory insurance against tuberculosis. A number of societies assume as their task the providing of aid for their members who have tuberculosis, and also aid for their families. Some of these societies are: (*a*) Herwonnen Levenskracht (recuperated vitality), a Catholic society for combating tuberculosis, which aids its members and persons of their family affiliated with the federation of Catholic artisans, or belonging to the Catholic societies of workmen. (*b*) The general fund for miners, which grants medical aid to miners and their families. The dues are paid partly by the workmen and partly by the mine owners (50 per cent each). (*c*) The railway employees' association for combating tuberculosis. (*d*) The association named "Draagt elkanders Lasten" (bear one another's burdens), established on a Christian basis. (*e*) The sanatorium for the marine. (*f*) "Willen is kunnen" (Qui vult, potest), the association for the municipal employees of Amsterdam, which has its own sanatorium. 2. There are some industrial organizations that take back into their service workmen who have completed a course of treatment, and grant them favorable conditions of work. 3. The following industries have medical services recognized by the committee of the insurance bank of the kingdom:

Werkspoor (construction work), Amsterdam and Zuilen.
Krombout Motorfabriek, Amsterdam and Zuilen.
"Willem-Sophie" Coal Mine, Heerlen.
Feyenoord (construction work), Rotterdam.
"Oisterwijk" Leather Factory, Oisterwijk.
Heemaf (electrical apparatus), Hengelo.
Artificial Silk Works; Arnhem, Ede and Hillegersberg.
State Mines, Heerlen.
"Orange-Nassau" Mine, Heerlen.
Wilton (builders), Rotterdam.
Lips (manufacturers of safes), Dordrecht.
The Philips Factories (electric lamps), Eindhoven.

(*a*) According to a labor decree, physicians may, in accord with the regional heads of inspection of labor, prescribe the conditions for the employment of women and for the employment of those who are not yet considered as adults. (*b*) Some industries provide for the inspection of dwellings; but there is as yet no extensive control of hygiene in general, with the exception of the Philips factories. 4. There are as yet no industries having hospitals or sanatoriums of their own, although there are societies having a sanatorium for the use of their members.

Vaccination Against Tuberculosis

Dr. Heynsius van den Berg communicated to the International Convention for the Combating of Tuberculosis, held in Oslo, observations made in the Netherlands, which were scientifically established, presenting in parallel series groups of vaccinated and of nonvaccinated children living in the midst of a tuberculous environment. There were 3.8 per cent of deaths from tuberculosis among the vaccinated group and 52.3 per cent of deaths from tuberculosis among the nonvaccinated group, which is proof that the resistance of vaccinated children is notably increased.

The Incidence of Poliomyelitis

The International Bureau of Public Hygiene has published an official report on the cases of poliomyelitis observed in the country in 1929 and 1930. In 1929 there were 507 cases of poliomyelitis notified, 123 from South Holland, 102 from Limburg, 68 from North Holland, and 49 from North Brabant. The widest incidence of the disease occurred in October. In 1930, the number of cases showed an increase beginning with the month of May. Whereas in 1929 the regions most affected were located in the southern and the eastern parts of the Netherlands, this year the central area is the region most affected; more particularly, South Holland and Gelderland. A circular letter addressed in June, 1930, by the "inspector general" of the public health service, to all the medical practitioners of the Netherlands, acquainted them with the means at their disposal when they discover a case of poliomyelitis. The country was divided into twenty-three districts in each of which a specialist in neurology was designated to assist the general practitioners. The latter could call in the neurologist for a consultation whenever they encountered a suspicious case, the expense of the consultation being charged to the central government. A card attached to the circular letter gave the general practitioner the name, address and telephone number of the neurologist to whom he should address

himself in case of need. The circular letter contained also information in regard to the chief clinical facts known with reference to the disease, which served to aid in the diagnosis of suspected cases and in controlling their development.

Owing to this organization, the diagnosis could be rapidly established and the proper treatment could be instituted without delay. Convalescents' serum, for securing which special regulations were established, would be sent to the neurologist, on request by telegraph, by the Central Laboratory at Utrecht. The attending physician and the neurologist unite their efforts to get the patient admitted to the hospital where the best conditions for recovery are obtainable.

Traffic Accidents in Amsterdam

During the previous quarter, the number of traffic accidents in Amsterdam reached 1,547, as compared with 1,430 for the corresponding period of last year, an increase of 8 per cent. The grave accidents gave a total of 181, as against 108 last year. Thirteen of the accidents resulted fatally and in eighty-six further cases the injuries were very serious. About 72 per cent of the accidents were due to the negligence of the drivers of the vehicles and 10 per cent were due to the carelessness of pedestrians. A comparative study of fatal and grave accidents in various cities follows: Amsterdam has 218.2 accidents per 100,000 inhabitants; London, 726.2; Liverpool, 514.2; Munich, 476.1, and New York, 903.3. Paris reports 105.4 accidents per 100,000 of population, but all the slighter accidents have been eliminated.

BERLIN

(From Our Regular Correspondent)

Oct. 13, 1930.

Mental Abnormalities in Women, Associated with Reproductive Processes

Prof. Hugo Sellheim, director of the Universitäts-Frauenklinik, in Leipzig, presented recently before the Juristisch-medizinische Gesellschaft of Leipzig a paper on "Influence of the Reproductive Cycles on the Sense of Moral Responsibility Displayed by Women." Three different branches of knowledge are concerned with researches on the influence of the reproductive phases in women, with all their anomalies and peculiarities —namely, gynecology, including obstetrics; psychiatry, and jurisprudence. Criminal manifestations are, on the whole, less marked in women than in men, but certain criminal acts are more common in women than in men; more particularly, certain acts that in their origin are associated with sex life and family life in general. In any event, the phases in the reproductive or sex life of woman affect increasingly psychic manifestations or disturbances in the various cycles of life. The psychic disturbances to be noted vary greatly in nature and in duration, and questions pertaining to the more or less restricted sense of moral responsibility must be studied in the light of the influences mentioned.

In unusual emotional acts of women, and especially in connection with misdemeanors and crimes, a careful inquiry must be made into the existing physical conditions that constitute the background or that may have had a precipitating influence.

It is not always the extreme degrees of mental exhaustion and excitement that demand consideration in the daily life of woman; also the emotional disturbances that appear without apparent cause require intelligent analysis. Under the influence of generative processes, ranging from puberty to the climacteric, or beyond, there appear from time to time, sometimes with frequent repetitions but often with considerable regularity, fear, irresoluteness, increased irritability, loss of memory—in fact, women may appear to be entirely changed in character.

Sellheim, therefore, recommends that women, burdened with the tasks of reproduction and often with outside occupational cares, be judged with the greatest forbearance. Their emotional disturbances cannot be understood without an open mind and a kindly appreciation of woman's character based on a knowledge of woman's bodily peculiarities.

Assembly of Society of German Scientists and Physicians

At a joint meeting of the two main sections of the ninety-first session of the Gesellschaft Deutscher Naturforscher und Aerzte, in Königsberg, Oct. 6-8, 1930, A. Dietrich of Tübingen spoke on the "Essential Nature and Causes of Thrombosis and Embolism." The mechanism of the origin and the growth of a thrombus is conditioned by the combined action of several factors; the chief influence is a change in the relations of vessel wall, blood and circulation. Thrombosis is not a purely mechanical process consisting merely of an elimination from the blood, but it is a reactive process precipitated by a disturbance of the relation between blood and vessel wall, in which one or the other may become abnormally dominant. The danger from embolism is slight in local thrombi of limited extent but is great in migratory thrombi, especially if a sudden change in the relation of vessel wall and blood should lead to a rapid discharge of loose thrombic masses. A. Mayer of Tübingen discussed the theme from the standpoint of the gynecologist. Puerperal thrombosis appears to be more frequent than postoperative thrombosis. Embolism, however, is more frequent after operations than post partum, and more frequent after occult and bland thromboses than after manifest and infectious thromboses. The differential diagnosis between infectious and bland thromboses is difficult to apply clinically. There is no form of prophylaxis that can be relied on with certainty. As regards therapy, the treatment of thrombosis with ambulatory bandages deserves attention; in embolism the Trendelenburg operation is a distinct step forward, though the indications for the operation are extremely difficult to determine. Zwerg of Königsberg spoke on the present status of "Radium Surgery in Its Application to Malignant Tumors." He described how, by the combined use of operation and the introduction of radium containers, most excellent results can be secured, though the treatment is limited essentially to certain tumors. For instance, highly favorable results are obtained in cancer of the bladder, whereas cancer of the prostate does not offer a favorable field. Cancer of the rectum should, as far as possible, be operated on, and the radium containers inserted afterward. With these measures, the results are much better than with any other mode of treatment. Cancer of the uterus should not be treated with radium—treatment with roentgen rays is by far more successful. The next topic was "The Roentgen Diagnosis of the Large Intestine." H. H. Berg of Berlin demonstrated how, with the aid of the roentgenogram, disorders of the large intestine can be recognized and differentiated. H. Chaoul of Berlin presented a paper on "The Roentgen Diagnosis of Tumor Formation in the Large Intestine." By means of roentgenologic examination of the large intestine pathologic organic changes can be diagnosed with immeasurably greater certainty than by the sole utilization of anamnestic and clinical methods, which commonly lead to atypical results.

At another session, M. Askanazy of Genoa spoke on "Benign Disorders of the Mammary Gland in Their Relations to Cancer of the Breast." The benign disorders that may lead to cancer consist of certain malformations and inflammations, a fibrosis associated with cyst formation, and certain benign growths. It is not certain that any one of them will lead to cancer. Cysts of the breast signify neither inflammation nor tumor. They are to be regarded merely as evidence of a peculiar irritability of the epithelium of the mammary gland. The epithelium may proliferate with or without metaplastic change and may develop into cancer. It has not been demonstrated that parasitic influence plays any part in the development of cancer of the breast in man. There may be marked predisposition of the organ, but that does not suffice for the formation of cancer.

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Marriages

R. M. BALDWIN, Madison, Wis., to Miss Lorenchia Christensen of Beloit, in Wilman, Minn., September 13.

THOMAS HENNING ANDERSON, Lawrenceville, Va., to Miss Ruth Sullenberger, of Monterey, September 25.

ADOLPH GOTTLIEB KAMMER, Belleville, Wis., to Miss Margaret M. Carrol of Philadelphia, September 6.

ROBERT E. BURNS to DR. CHARLOTTE J. CALVERT, both of Madison, Wis., in Minneapolis, September 16.

EARL D. MCCONNELL, Darlington, Wis., to Miss Mary E. Cox of Platteville, in Madison, September 2.

N. WARREN BOURNE to Miss Evangeline Lueth, both of Milwaukee, at Manitowoc, September 16.

HENRY CHARLES DAVIS, Grundy, Va., to Miss Vida Louise Looney of Welch, W. Va., August 30.

LEWIS ABNER LAW, Alberta, Va., to Miss Evelyn Virginia Thompson of Lexington, September 3.

THOMAS BOYD WASHINGTON to Mrs. Effie Daniel Ansley, both of Richmond, Va., September 1.

LEO FRANK CHESS, Reed City, Mich., to Miss Thelma Heck of Blairstown, Iowa, September 5.

FRED O. E. EGGERT, Chicago, to Miss Helen Jane Duncan of Appleton, Wis., September 10.

CHARLES R. ANDERSON to Miss Lena R. Riley, both of Winchester, Va., August 21.

JOHN WILLARD TRAVELL to Mrs. Edith Talcott Bates, both of New York, August 14.

CARLTON J. RYAN to Miss Elvira E. Dashner, both of Adams, Wis., August 26.

Deaths

Preston Manasseh Hickey ● since 1922 professor of roentgenology, University of Michigan Medical School, Ann Arbor, died, October 30, aged 64. Dr. Hickey was born in Ypsilanti, Mich., Dec. 3, 1865. He graduated from the University of Michigan in 1888, and the Detroit College of Medicine, in 1892. Dr. Hickey was professor of roentgenology at his alma mater from 1909 to 1922. He was a lieutenant colonel during the World War and a consultant in roentgenology in the American Expeditionary Forces, a member of the American College of Physicians, the American College of Surgeons, the Radiological Society of North America, the American College of Radiology, and member and past president of the American Roentgen Ray Society. He was roentgenologist to the Children's Hospital, Harper Hospital, Receiving Hospital, Detroit, and the University Hospital, Ann Arbor. Dr. Hickey was one of the pioneer radiologists. He was largely responsible for increasing the scope of the radiologic exhibit which has become outstanding at the annual sessions of the American Medical Association. He was instrumental also in the establishment of the Henry Simpson Memorial Institute for Medical Research at Ann Arbor.

Derrick Tilton Vail, Sr. ● Cincinnati; Miami Medical College, Cincinnati, 1890; emeritus professor of ophthalmology, University of Cincinnati College of Medicine; member and past president of the American Academy of Ophthalmology and Oto-Laryngology, member of the American Ophthalmological Society and the American College of Surgeons; consulting ophthalmologist to the Cincinnati General Hospital; proprietor of a hospital bearing his name; aged 66; died, October 29, of heart disease.

Lever Flegal Stewart ● Clearfield, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1910; member of the American College of Surgeons; served during the World War; aged 42; died, July 22, in the Jewish Hospital, Philadelphia, of cholelithiasis.

Dean Spencer Drake, White River Junction, Vt.; University of Vermont College of Medicine, Burlington, 1904; member of the Vermont State Medical Society; served during the World War; aged 58; died, August 30, in Monson, Mass., of angina pectoris.

Luther F. Crawford, Tyrone, Pa.; Eclectic Medical Institute, Cincinnati, 1890; member of the Medical Society of the State of Pennsylvania; veteran of the Spanish-American War; aged 71; died, August 22, in Pittsburgh, of heart disease.

Fred Fisher, Jr. ● Erie, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1913; owner of an eye, ear, nose and throat hospital; aged 39; died, September 2, in the Augustana Hospital, Chicago, of acute appendicitis.

Hollis Goodell Dean ● Fredonia, Pa.; Chicago Homeopathic Medical College, 1891; Hahnemann Medical College and Hospital, Chicago, 1905; aged 65; died, September 1, in the Mercer (Pa.) Cottage Hospital, of angina pectoris.

Charles Philip McCabe, Greenville, N. Y.; Albany Medical College, 1883; member of the Medical Society of the State of New York; aged 74; died, in September, in Albany, of chronic myocarditis and cerebral arteriosclerosis.

Charles Henderson Chandler, Fort Fairfield, Maine; Tufts College Medical School, Boston, 1911; member of the Massachusetts Medical Society; aged 44; died, September 5, of chronic myocarditis and bronchopneumonia.

John Claudius Young, Cuba, N. Y.; University of Buffalo School of Medicine, 1871; member of the Medical Society of the State of New York; aged 85; died, October 4, of chronic bronchitis and myocarditis.

William W. Pennell ● Mount Vernon, Ohio; University of Wooster Medical Department, Cleveland, 1875; aged 77; died, September 30, in the Christ Hospital, Cincinnati, of myocarditis and prostatitis.

James William McDonald, Worcester, Mass.; University of Maryland School of Medicine, Baltimore, 1902; member of the Massachusetts Medical Society; aged 60; died, September 26, of heart disease.

Francis Rupright, East Gilead, Mich.; Indiana Eclectic Medical College, Indianapolis, 1888; aged 66; died, September 28, in the New Borgess Hospital, Kalamazoo, of cerebral hemorrhage.

Sarah J. McNutt, Albany, N. Y.; Woman's Medical College of the New York Infirmary for Women and Children, 1877; aged 91; died, September 10, of arteriosclerosis and myocarditis.

Charles P. Peterman, Brooklyn; Long Island College Hospital, Brooklyn, 1883; member of the Medical Society of the State of New York; aged 73; died, October 6, of heart disease.

Thomas Wilson Burrows, Chicago; Rush Medical College, Chicago, 1887; on the staff of a hospital bearing his name; aged 68; died, September 26, in Utrecht, Holland, of heart disease.

George F. Mead, Pinckneyville, Ill.; St. Louis College of Physicians and Surgeons, 1892; member of the Illinois State Medical Society; aged 66; died, October 1, of heart disease.

Joseph Fernand Lescale, New Orleans; Medical Department of the Tulane University of Louisiana, New Orleans, 1895; aged 58; died, September 21, of myocarditis and nephritis.

George O. Maskey, Upper Sandusky, Ohio; Medical Department of Western Reserve University, Cleveland, 1882; aged 74; died, in October, of cerebral hemorrhage.

Louis Henry Warner, Newark, N. J. (licensed, New York, 1893); aged 69; died, October 4, in the Homeopathic Hospital, East Orange, of acute intestinal obstruction.

William J. Davis, Pottstown, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1889; also a druggist; aged 62; died, September 11, of nephritis.

Shelby Cullom Shurick ● Wrangell, Alaska (licensed, Alaska, 1909); served during the World War; aged 53; died, July 13, of tuberculous laryngitis.

J. Paul Harvill, Nashville, Tenn.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1901; aged 58; died, October 6, of angina pectoris.

Elmer Ellsworth Best, Los Angeles; College of Physicians and Surgeons, Chicago, 1889; aged 72; died, August 29, of hemorrhage, following a fall.

Clarence Elton Wheeler, Milwaukee; Milwaukee Medical College, 1901; aged 59; died, August 25, of cerebral hemorrhage and cirrhosis of the liver.

Asa Bennett Stratton, Exeter, Neb.; Central Medical College of St. Joseph, Mo., 1895; aged 69; died, August 31, of cerebral hemorrhage.

Ralph Parker Dowd ● Fisher, Ill.; Medical College of Ohio, Cincinnati, 1893; aged 64; died, September 29, of arteriosclerosis.

Charles Edward Williams, Boston; Tufts College Medical School, Boston, 1900; aged 75; died, September 23, of cerebral hemorrhage.

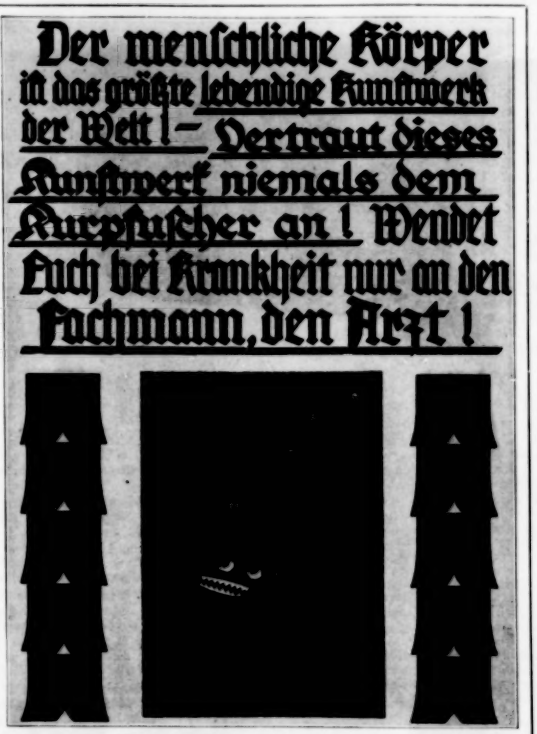
Bureau of Investigation

MORE MISBRANDED NOSTRUMS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

Old Mission Laxative Cold Tablets.—The S. Pfeiffer Manufacturing Company, St. Louis, Mo., shipped in January, 1929, into Indiana a quantity of Old Mission Laxative Cold Tablets that were declared misbranded. The tablets were reported to contain, chiefly, acetanilide, a cinchonine compound, extracts of laxative plant drugs, terpin hydrate, oil of wintergreen, and a small amount of potassium bromide. The claims that this was a remedy for coughs and influenza were declared false and fraudulent and in September, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed. — [*Notice of Judgment 16790; issued May, 1930.*]

A. D. S. Cold and Grippe Tablets.—The Vadsco Sales Corporation, Long Island City, N. Y., shipped into Illinois in January, 1929, a quantity of A. D. S. Cold and Grippe Tablets that were declared misbranded. The tablets were found to contain acetanilide, quinine sulphate, aloin, camphor, red pepper and extract of podophyllum. The claim that the product was a remedy for influenza was declared false and fraudulent; the statement that each tablet contained 2 grains of acetanilide when, as a matter of fact, it contained less than that constituted further misbranding. In April, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16799; issued May, 1930.*]


Der menschliche Körper
ist das größte lebendige Kunstwerk
der Welt! – Vertraut dieses
Kunstwerk niemals dem
Kurpfuscher an! Wendet
Euch bei Krankheit nur an den
Fachmann, den Arzt!

This is a monotone reproduction of a four color (red, green, yellow and black) poster issued by the German Society for Combating Quackery. A free translation reads: "The Human Body is the Greatest Work of Art in the World! Do Not Entrust this Work of Art to a Quack! During Illness Consult only a Reputable Physician!"

"To Teach Hygiene!
"To Combat Superstition!
"To Expose Frauds and Swindles!
"To Eradicate Quackery!
"Help Us to Attain These Aims!

Astyptodyne and Astyptodyne Cough Syrup. — The Astyptodyne Chemical Company, Wilmington, N. C., shipped in January and December, 1928, and January, 1929, into South Carolina quantities of Astyptodyne and Astyptodyne Cough Syrup, both of which were declared misbranded. Astyptodyne was found on analysis to consist of pine oil, while the Astyptodyne Cough Syrup consisted of sugar syrup and 2 per cent of pine oil. The claims for Astyptodyne, to the effect that it was a remedy for old ulcers, sores, wounds, skin eruptions, itch, eczema, neuralgia, etc., and the claims for Astyptodyne Cough Syrup, to the effect that it was a remedy for coughs, sore throat, bronchitis, whooping cough and croup, were declared false and fraudulent, while the further claim that Astyptodyne was antiseptic and germicidal was declared false and misleading. In June, 1929, the court ordered that the product be destroyed.—[*Notice of Judgment 16800; issued May, 1930.*]

Nip-a-Co Capsules. — Frederick Stearns and Company of Detroit shipped in September, 1928, to West Virginia a quantity of Nip-a-Co Capsules that were declared adulterated and misbranded. Analysis showed the capsules to contain, essentially, acetanilide, cinchonine sulphate, magnesium carbonate, red pepper, extracts of plant drugs including podophyllum and jalap, traces of salicylic acid, and alkaloids of aconite. It was declared adulterated because the label declared that each capsule contained cod liver oil extract, which the federal chemists reported it did not; this claim also constituted misbranding. Further, the therapeutic claims that this was a remedy for neuralgia and influenza were declared false and fraudulent. In May, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16851; issued July, 1930.*]

Pronto.—The National Drug Products, Inc., Albany, N. Y., shipped into Florida in January, 1929, a quantity of Pronto that was declared misbranded. The government chemists reported that it consisted essentially of ammonium salicylate, glycerine, small amounts of potassium, antimony and free ammonia, traces of magnesium, chlorides and sulphates, and an extract of a laxative plant drug. The claims that it was a remedy for influenza, sore throat, chronic constipation, bronchitis, etc., were declared false and fraudulent, and in October, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 16869; issued July, 1930.*]

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Correspondence

THE MENACE OF THE MEAT DIET

To the Editor:—In a recent editorial (Is a Meat Diet a Menace? THE JOURNAL, September 20, p. 866) you conclude by inference that a meat diet will not injure the kidneys and cite the observations at the Russell Sage Institute of Pathology on two arctic explorers as experimental support for your views. So far as I can see, the only conclusion properly deducible from these observations is that an average intake of meat protein of from 100 to 140 Gm. daily for one year causes no detectable kidney damage. What might happen after two or more years on such a diet remains unknown.

The experiment of Newburgh, Falcon-Lesses and Johnston (*Am. J. M. Sc.* **179**:305 [March] 1930), in which evidence of kidney damage in man was obtained on a diet containing 330 Gm. of meat protein per diem in less than six months, indicates that renal injury may be caused by diets sufficiently high in meat protein. Further, Newburgh and his co-workers (Newburgh and Curtis: *Arch. Int. Med.* **42**:801 [Dec.] 1928) have succeeded in producing chronic nephritis in laboratory animals by high meat diets.

However, it remains to be determined (1) whether the animal nephritis produced by meat protein is pathologically analogous to chronic nephritis in man, (2) whether human beings ordinarily, or even occasionally, eat enough meat protein to cause chronic nephritis, and (3) whether the meat consumption of patients with chronic nephritis has been at such levels as might cause nephropathy. Meat protein might cause chronic nephritis and yet not be the usual etiologic agent because not ingested at appropriate levels.

In contrast to the studies of Thomas and Heinbecker, who found no unusual incidence of kidney disease among Eskimos, must be placed the investigations of Hindhede, who finds that chronic nephritis is most common in people who eat much animal food.

The entire problem, I believe, should be kept *sub judice* until the foregoing questions are more fully answered.

MARK FALCON-LESSES, M.D., Boston.

THE "MEDICAL INTERPRETER"

To the Editor:—Kindly give publicity to the following:

Under date of April 13, 1930, I received a letter from Dr. Arthur F. Stotts, Colonel, Medical Reserve Corps, Galesburg, Ill., stating that a representative of the *Medical Interpreter* had informed him that the *Medical Interpreter* was published in conjunction with the Public Health Service and the Army Medical Library, and requesting information in regard to the matter. Under date of September 2 I had a similar letter from Dr. W. L. Casler, Marquette, Mich., and under date of October 13, a similar one from Dr. Ewald Hermann.

These letters suggest that there is a systematic effort to make it appear that the *Medical Interpreter* bears an official relationship to the public health services and especially to the Army Medical Library.

The facts are that two employees of the *Medical Interpreter*, women without medical training so far as I know, utilize the Army Medical Library as all citizens may. I understand that their work is the preparation of abstracts and bibliographies for subscribers to the *Medical Interpreter's* service.

Any representation that the *Medical Interpreter* shares its profit, if any, with the Office of the Surgeon General of the Army or with the Army Medical Library, or that they or either of them is associated with it, interested in it, or even gives it approval, is false and misleading.

M. W. IRELAND, M.D., Washington, D. C.
Surgeon General, United States Army.

"SOMNOFORM"

To the Editor:—I have recently received from the Stratford-Cookson Company of Philadelphia an advertisement of "Somnoform." The formula given for "Somnoform" is chloride of ethyl, 83 per cent; chloride of methyl, 16 per cent; bromide of ethyl, 1 per cent. Below this formula it is asserted that "the record of Somnoform for safety is without equal." If such is the case the record must be regarded as a pure piece of good fortune, for two at least of the ingredients of "Somnoform" have a toxicity which renders them unfit for use as anesthetics. The poisonous character of methyl chloride has been sufficiently demonstrated by the refrigerator cases in Chicago. Although the amount of ethyl bromide in the mixture is small, there are general grounds for believing that the toxicity of the substance is high. Ethyl chloride is, of course, a commonly used and convenient anesthetic, but it possesses to a considerable degree dangers of the same type as chloroform. As much safer anesthetics, such as ether, ethylene and nitrous oxide, are available, there is really, in my opinion, little justification for the continued use of ethyl chloride as an anesthetic at all.

YANDELL HENDERSON, PH.D., New Haven, Conn.

[NOTE.—In 1919 the Council on Pharmacy and Chemistry declared "Somnoform" inadmissible to New and Nonofficial Remedies because, in the absence of acceptable evidence showing its exceptional safety and value, the claims made for it were held to be unwarranted and because the name of the mixture is not descriptive of its composition.—ED.]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

OVARIAN EXTRACTS AND HORMONES AND SEXUAL FRIGIDITY

To the Editor:—Will you please explain the difference between the newly discovered sex hormone and the older substances, as ovarian extract and corpus luteum? What is the recognized name for the former? How does the former differ from the latter in action in the female? Which pharmaceutic company manufactures the former? What is the treatment for female frigidity when it is congenital and hereditary? The patient has one child. Both she and her husband are intelligent, but I foresee a family separation unless this matter is corrected. There is no anatomic abnormality in the female and she is willing to do anything possible to adjust this matter. Please omit name.

M.D., New York.

ANSWER.—It is not surprising that some physicians have a hazy conception of the differences between the newly discovered female sex hormones and other hormones which are produced in the female genitalia. Even authorities are not agreed on the differences. Frank (The Female Sex Hormone, 1929) points out that many investigators believe there is only one female sex hormone which is responsible for all the sex phenomena including the estrual cycle in the lower animals and the menstrual cycle in the anthropoids. Others believe that in addition to the ovarioplacental hormone there is a second inhibitory one which arises in the corpus luteum at the same time the female sex hormone is being secreted. This special corpus luteum hormone regulates the rhythm of the cycle and sensitizes the uterine mucous membrane. These researches indicate that the corpus luteum secretes two different hormones simultaneously. Allen and Corner (*Proc. Soc. Exper. Biol. & Med.* **27**:403 [Feb.] 1930) recently demonstrated a substance in the corpus luteum of pigs which, when injected, will maintain pregnancy to full term in rabbits spayed at the eighteenth day after mating.

The graafian follicle and its successor the corpus luteum are the sources of the hormones which bring about puberty and the continuation of the menstrual cycle. The hormone from the follicle prepares the uterus for menstruation while the corpus luteum continues and adds to this hormonal action. By means of this the uterine endometrium is prepared for the reception of a fertilized ovum. Papanicolaou (THE JOURNAL, May 8, 1926, p. 1422) states that there is a hormone produced by the corpus luteum which is antagonistic to the female sex hormone. He calls it the "luteal hormone" and its function is

to inhibit further maturation of graafian follicles during the periods of physiologic amenorrhea between puberty and the menopause.

The female sex hormone is found in the follicle fluid, the corpus luteum, the placenta, the blood, the urine of normal women, the urine of pregnant women, the feces, the bile, the blood of males and other tissue fluids. It may also be found in plants. Excellent pioneer work on the isolation of this principle has been done by E. A. Doisy, who has coined for it the nonproprietary name "Theelin" (THE JOURNAL, May 10, 1930, p. 1523).

The anterior pituitary hormone recently discovered in the urine by Aschheim and Zondek differs from the female sex hormone found in the unruptured follicle, the corpus luteum and the placenta in the following way: The pituitary hormone influences the ovaries so as to cause the ripening of immature follicles and the formation of corpora lutea. For this reason Zondek calls the anterior pituitary gland "the motor of ovarian activity." It has no direct effect on the uterine and vaginal mucosa. On the other hand, the female sex hormone has practically no effect on the follicular apparatus but it does have a distinct stimulating influence on the lower genital tract, bringing about estrus in castrated mice and rats. The anterior pituitary hormone is most likely more important in sex physiology than what has hitherto been considered as the characteristic female sex hormone.

Three biologic tests have been devised, based on these hormones. In one, adult spayed mice are employed and estrus is produced by the female sex hormone. In the second, noncastrated infantile mice are used and an effect is produced in the uterus and vagina through the ovary. The hormone responsible for this presumably comes from the anterior pituitary. The third test consists of injecting blood serum from pregnant women into immature virgin animals and producing changes in the uterus and estrus.

Ovarian extract is a mixture of everything in the ovary—graafian follicle, corpus luteum, stroma. It has practically no specific action (THE JOURNAL, June 21, p. 1997).

Commercial extracts of the female sex hormone are made in this country by E. R. Squibb and Sons under the trade names of Ovarian Hormone-Squibb and Amniotin-Squibb (THE JOURNAL, May 18, 1929, p. 1678) and by Parke, Davis & Company under the trade name of Estrogen. European preparations and their manufacturers are as follows: Menformon old and Menformon new, made by Degewop; Sistomensin and Agomensin, made by Ciba. Other foreign extracts of the female sex hormone are Folliculin and Hormovar.

The prices for these extracts are high and thus far the clinical results obtained with them have not been striking. Their use is still in the experimental stage, although some women may have been benefited by them. In many instances these products when given hypodermically produce unpleasant local and systemic reactions. Recently Allen and Baker (*Am. J. Obst. & Gynec.* **20**:85 [July] 1930) reported that the administration of amniotin-Squibb in gelatin pessaries by the vaginal route was not only less objectionable but more effective than subcutaneous injections of water preparations.

The treatment of frigidity in the female is usually entirely unsatisfactory. A large proportion of women have absolutely no libido and little can be done for most of them. In many cases there is a psychic factor which can or cannot be overcome. In most instances the wife has no real deep love for her husband; but on the other hand frigidity may be present even when sincere love is a certainty. Drugs are almost entirely useless. Occasionally hot tub baths before going to bed for the purpose of producing a hyperemia are helpful. Fewer matrimonial disagreements would arise if frigid women would refrain from confessing their sexual anesthesia to their husbands.

ACUTE SWELLING OF THE TONGUE

To the Editor:—A man, aged 45, weight 220 pounds (100 Kg.), health perfect and without previous sickness, came to me with a swollen tongue. The swelling began about 6 p. m., and he came to see me two hours later with the tongue so swollen that it was difficult for him to talk. He said that at first it felt as if there were a small pimple on the outside of the tongue. By midnight it commenced subsiding and he soon was relieved. He did not complain of pain or tenderness. There was no discoloration. The temperature and pulse were normal. I would appreciate a diagnosis and discussion of the treatment. Please omit name. M.D., Tennessee.

ANSWER.—An acute swelling of the tongue might result from an injury such as biting it, which may have been forgotten. It might have been an angioneurotic edema or urticaria, in which one may obtain a history of previous attacks. An acute local inflammatory condition might cause the symptoms. This is perhaps the most likely cause in the absence of a history of the other conditions. However, it is rather unusual for infection to develop and subside suddenly without other evidence than the feeling of a pimple, which may have been the result of the swollen tongue projecting between two teeth.

Occasionally, with an acute tonsillitis, an abscess may develop in a crypt producing an acute local edema on one side of the tongue. This would promptly subside with spontaneous drainage of the crypt. Such an infection might occur in any of the small glands or lymph follicles in the mouth. Pain is not always present. The teeth should be examined for abscesses, since they may cause a submaxillary inflammation of the glands, causing swelling of the tongue.

The treatment depends on determining the cause. In early infections with edema, incision should be avoided until there has been a sufficient time for a protective zone of round cell infiltration with evidence of abscess formation. Intermittent large hot moist applications to the region involved are indicated. Continuous hot applications may aggravate the edema, which may extend to the larynx.

A Ludwig's angina may result when there is a cellulitis extending to the submaxillary triangles from the floor of the mouth. This has a high mortality and requires extensive operative drainage to prevent its extension.

All patients with the symptoms of the swelling described should be carefully observed with frequent blood counts until relief has been obtained. When abscess formation is suspected, it should be incised.

BURN WITH TETRA-ETHYL LEAD OR ETHYLENE DIBROMIDE

To the Editor:—Recently one of our laboratory men was burned on the dorsal medial surface of his left hand with tetra-ethyl lead used in making ethyl gasoline, and the process is called "knock rating." When he was questioned concerning the burn the man related: "It feels like my hand had been stuck in flame of fire and just as soon as I put it in water and wash off the fluid, the sensation disappears but the burn is present." The burn that he had was of first degree nature, acute hyperemia. I will appreciate it if you will give me the antidote or neutralizing agent for this type of burn and the best way to handle it in regard to treatment.

R. HENRY HARRISON, JR., M.D., Ingleside, Texas.

ANSWER.—Tetra-ethyl lead is not a skin irritant. Exposure in the manner indicated may be expected to lead to no more skin irritation than from an equal amount of gasoline. Frequently there is associated, with the tetra-ethyl lead, ethylene dibromide, which is known to possess some irritant properties. It is likely that the burn referred to is due to the latter substance. Immediately following exposure, any worker should apply kerosene or some similar substance. This application is not so much to prevent skin irritation as to prevent absorption, since both tetra-ethyl lead and ethylene dibromide are absorbable through this portal. Following this step, the portion of the body so exposed and so treated should be washed with soap and water in order to remove the kerosene containing these chemicals. No other treatment is ordinarily required, but, if skin irritation requires further attention, such conditions may be treated as any other burn of equal severity.

TREATMENT OF COLITIS

To the Editor:—A patient of mine was taken sick with a hard chill, June 24, and immediately developed a severe colitis. By using the usual treatment I soon got the bowels checked, but I cannot get them regulated. The patient has been kept on a soft diet until almost starved, but the bowels would immediately break loose if anything but soft diet was given. When the bowels are checked, impactions form which require an opiate to move as he has been sick so long, he has no strength to pass the impaction, and the cramping is intense when the bowels move. Is there any treatment for these impactions, which form in the bowels about every six or seven hours? It is impossible for the patient to endure the pain without a hypodermic of morphine after an enema. Is there any treatment for it? The bowels seem to be paralyzed and the patient is growing weaker each day. Will the morphine have a tendency to constipate? The patient became addicted while the colitis was so bad. I would be more than glad if you could suggest something to do as I am at my wits' end. Please omit name.

M.D., Illinois.

ANSWER.—It would be best to continue on a smooth diet, a diet the particles in which are so fine that they could go or have gone through a sieve, until the patient is well beyond the present stage. Then a gradual return to general diet should be attempted by adding tender cellulose-containing vegetables, such as spinach, cauliflower and asparagus, then bran, and later the coarser vegetables. Oils should be used freely from above as well as from below. Liquid petrolatum, in doses of a tablespoonful or two, may be taken morning and evening and half an hour before dinner and supper as well. The oil enema (as much warm olive oil as the patient can retain over night) should be repeated every evening for several days. If enough oil is used, the hard fecal masses cannot form; and, if any are

passed during this treatment it is reasonable to assume that they have been in the bowel prior to it.

If, in spite of the liquid petrolatum and the oil enemas, spontaneous bowel movements do not occur, then a course of castor oil, taken instead of the liquid petrolatum, in similar doses will surely do the work. In addition, the patient should be weaned of the use of opiate by employment of another analgesic, if required, such as extract of hyoscyamus, 0.02 Gm., phenobarbital, 0.03 Gm., and amidopyrine, 0.3 Gm., in capsules, repeated every two to four hours as required. If this does not suffice to relieve the pain, codeine phosphate, 0.03 Gm., may have to be added for a time.

TUBERCULOSIS AS CONTRAINDICATION TO ATHLETICS

To the Editor:—I recently examined a boy, aged 15 years, who was referred to me by his father with particular reference as to whether to allow his son to participate in athletics. The boy is attending high school and is a member of the school soccer team. The boy's mother died of tuberculosis at the age of 26 when the boy was 4 years of age. In the mother's family all the brothers and sisters died of tuberculosis, also the mother's father. The boy was in actual contact with the tuberculous mother during four years. The boy is now 5 feet 9 inches (175 cm.) in height, weighs 127 pounds (57.6 Kg.), is of good build, and on detailed examination presents a normal chest. Roentgen examination reveals an angular symmetrical chest. There is calcification and prominence of both hili associated with a calcified focus in the second intercostal space on the right side. The diaphragm is smooth. The total heart area is proportionately small. The roentgenologist came to the conclusion that there was a healed tuberculous focus in the second intercostal space on the right side. There is, however, no evidence of any recent involvement. The question in this case arises as to whether to prohibit this boy, who is physically normal, from playing in a sport such as soccer, of which he is fond, or to allow him to continue to indulge in any such strenuous athletic activity. Is there a possibility of the healed tuberculous process "lighting up" at any time. Please omit name. M.D., New York.

ANSWER.—As it is impossible to tell absolutely from a roentgenologic examination whether the focus of tuberculosis has entirely healed, this boy must be watched from the standpoint of possibly having living tubercle bacilli present in the affected area. As he is underweight for his height and in his rapidly growing years, he should never exercise to the point of fatigue or exhaustion, such as is necessitated by competitive sports such as soccer. His exercise should consist of walking or calisthenics. Every effort should be made to prevent a lighting up of his old focus; especially should he avoid fatigue and exhaustion, spend plenty of time in the fresh air, eat plenty of good general diet containing adequate calcium (milk, eggs and vegetables) and vitamins, including cod liver oil. He should be built up if possible so that his weight more nearly corresponds with his height.

TREATMENT OF MAXILLARY SINUSITIS

To the Editor:—I have a patient who has had a chronic maxillary sinusitis for about ten years and is subject to frequent acute relapses. He has been to various specialists. He usually gets relief for a short time, but recently he has failed event to get temporary relief. Some blood is discharged from both nostrils and is presumably coming from the sinuses. He had had the sinus (the one causing most of the trouble) opened and irrigated and treated many times. Would you advise a more radical operation and curet the sinus or not?

R. H. DUNN, M.D., Rosholt, Wis.

ANSWER.—It is quite possible that erosion, either of the mucosa of the sinuses themselves or of the turbinates or septum, might be the cause of the appearance of blood. Whether a more radical operation should be done can be judged only by careful examination of the patient himself.

RECURRENT DERMATITIS NOT DUE TO MAGNESIUM SULPHATE

To the Editor:—Are there any cases on record in which the long continued taking of magnesium sulphate, say a dose every other night, has caused chronic eczema? I have been doing this for about five years to hold down high blood pressure, and for the last five months both hands are broken out with a bad case of chronic eczema which has not been benefited by any kind of treatment. This breaking out might have been started by poison ivy early this spring as I have had it at various times for forty years; however, it has never been so persistent before. What would you suggest? Please omit name.

M.D., Oklahoma.

ANSWER.—The magnesium sulphate probably has nothing to do with the production of the eczema described in this instance. It is probably of allergic nature and it is quite possible that the present recurrence of the dermatitis is due to ivy. Recurrent dermatitis of this type is very difficult to manage. General suggestions will be of no value. Specific things must be outlined and these can be determined only by the careful examination of a competent physician.

COLLOIDAL SILVER—CALCIUM LACTATE IN NEPHRITIS—ACID TREATMENT OF HAY-FEVER

To the Editor:—Please give me the following information: 1. Discuss the use of colloidal silver, such as choleval, given intravenously in cases of inflammation or stone in the gallbladder. 2. Discuss the efficacy of large doses of calcium lactate in nephritis with edema. 3. Discuss the value of nitrohydrochloric acid in the treatment of hay-fever.

F. R. PERFECT, M.D., Lykens, Pa.

ANSWER.—1. Choleval is claimed to be a colloidal silver preparation with the use of bile acid salt as protective colloid. It is a brownish black water soluble powder, the intravenous use of which in doses of 10 cc. of a 1 per cent solution has been advocated in inflammatory processes of the biliary passages. Its value in this condition is not established, and it has not been admitted to New and Nonofficial Remedies.

2. Calcium lactate, even in large doses, is not an important remedy in edema. Calcium chloride in higher doses is no doubt more efficient but also more disagreeable.

3. Nitrohydrochloric acid seems to have been helpful in some cases of hay-fever and to have failed completely in others. Whether the favorable effect, when such was observed, was due to accidental association, to suggestion, or to mobilization of calcium as part effect of the tendency to acidification of the system is still undecided.

INTERSTITIAL KERATITIS

To the Editor:—A girl, aged 14, developed a bilateral interstitial keratitis two years ago and was treated at a hospital at that time for a couple of months. She has been under my care since July 1, and has been given bismuth salicylate intramuscularly and a potassium iodide mixture orally. A Wassermann test made during the latter part of August was 4+. Kindly outline a detailed treatment. Is arsphenamine contraindicated in cases with keratitis; if so, why? There are no other signs of congenital syphilis. Please omit name.

M.D., Saskatchewan.

ANSWER.—Arsphenamine is not contraindicated in interstitial keratitis, nor is it of any especial benefit above any other accepted treatment for congenital syphilis. It is the generally accepted opinion that, after the first acute stage of interstitial keratitis has passed, the systemic treatment had best be confined to mercury and the iodides, by inunction or injection. The best results are obtained by the cooperation of the ophthalmologist and the syphilologist, the latter having experience with congenital syphilis that the former lacks.

TREATMENT OF HEMORRHAGE AFTER EXTRACTION OF TEETH

To the Editor:—A woman, aged 55, has six remaining teeth, which are definitely infected and are about to be extracted. She has always had a severe hemorrhage after previous extractions—the last one four years ago. She bled severely following three surgical operations which she has undergone. The coagulation time of her blood is twelve minutes. What should be done, first, to reduce the coagulation time, and, secondly, to treat the hemorrhage after extraction? Please omit name. M.D., Connecticut.

ANSWER.—The coagulation period in cases of this type is usually definitely lowered by the intravenous injection of 50 cc. of a 50 per cent dextrose solution, together with the intravenous injection of 1 Gm. of calcium chloride. This may be repeated three or four times on alternate days. When the coagulation time has been brought down to five or six, or even seven, minutes, the teeth may be removed, and at the time the gum tissue should be securely sutured.

IMPOTENCE AFTER JUVENILE EXCESS

To the Editor:—A white man, aged 28, indulged in sexual excesses for ten years, beginning at the age of 16. At 26 he became engaged and gave up "running around." He married, three months ago, and found himself unable adequately to complete the sexual act. During the past two years he has put on considerable fat, which seems, however, to be normally distributed. The pubic hair has been slowly falling out during the past year, although the general distribution of hair is normal. There is no venereal history, and the Wassermann reaction is negative. A specimen shows a rather small discharge which contains numerous actively motile spermatozoa. Treatment for several weeks with testicular extracts has brought only occasional temporary help—if this can be credited to the extracts. Please give prognosis and treatment. Please omit name and address.

M.D., New York.

ANSWER.—Symptoms of sexual exhaustion following juvenile excesses are a rather frequent occurrence. The absence of any venereal history excludes the administration of any local or antisyphilitic treatment. Testicular extracts have been found to be without effect; occasionally improvement of the productive and cohabitative sexual power is observed after repeated hypodermic administration of an extract of the anterior lobe of the pituitary body.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Eclectic Board, Little Rock, Nov. 11 and 12, 1930. Sec., Dr. Claude E. Laws, 803½ Garrison Ave., Fort Smith, Ark. Regular, Little Rock, Nov. 11-12, 1930. Sec., Dr. Sam J. Albright, Searcy, Ark. Homeopathic, Eureka Springs, Nov. 11, 1930. Sec., Dr. Allison A. Pringle, Eureka Springs, Ark.

CALIFORNIA: San Francisco and Los Angeles, Dec. 10, 1930. Reciprocity examinations. Sec., Dr. C. B. Pinkham, 420 State Office Bldg., Sacramento, Calif.

CONNECTICUT: Regular, Hartford, Nov. 11 and 12, 1930. Sec., Dr. T. P. Murdock, 147 W. Main St., Meriden, Conn. Homeopathic, New Haven, Nov. 10, 1930. Sec., Dr. E. C. M. Hall, 82 Grand Ave., New Haven, Conn.

FLORIDA: Jacksonville, Nov. 10-11, 1930. Sec., Dr. W. M. Rowlett, P. O. Box 603, Tampa, Fla.

KANSAS: Topeka, Dec. 9, 1930. Sec., Dr. A. S. Ross, Sabetha, Kan.

MAINE: Portland, Nov. 11-12, 1930. Sec., Dr. Adam P. Leighton, 192 State St., Portland, Me.

MARYLAND: Regular, Baltimore, Dec. 9-12, 1930. Sec., Dr. H. M. Fitzhugh, 1211 Cathedral St., Baltimore, Md. Homeopathic, Baltimore, Dec. 9, 1930. Sec., Dr. J. S. Garrison, 517 Old Orchard Rd., Ten Hills, Baltimore, Md.

MASSACHUSETTS: Boston, Nov. 12-14, 1930. Sec., Dr. Frank M. Vaughan, 144 State House, Boston, Mass.

NEBRASKA: Lincoln, Nov. 20-22, 1930. Sec., Mr. Ernest M. Pollard, Lincoln, Neb.

OHIO: Columbus, Dec. 1-4, 1930. Sec., Dr. H. M. Platter, 85 E. Gay St., Columbus, Ohio.

SOUTH CAROLINA: Columbia, Nov. 11, 1930. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia, S. C.

TEXAS: Waco, Nov. 18-20, 1930. Sec., Dr. T. J. Crowe, 918-19 Mercantile Bank Bldg., Dallas, Texas.

UTAH: Salt Lake City, Dec. 15 and 16, 1930. Dir., Mr. S. W. Golding, 326 State Capitol Bldg., Salt Lake City, Utah.

VIRGINIA: Richmond, Dec. 9-12, 1930. Sec., Dr. J. W. Preston, 803 Medical Arts Bldg., Roanoke, Va.

WEST VIRGINIA: Morgantown, Nov. 20, 1930. Sec., Dr. W. T. Henshaw, Charleston, W. Va.

WISCONSIN: Milwaukee, Dec. 13, 1930. Basic Science. Sec., Dr. R. N. Bauer, 3410 Wisconsin Ave., Milwaukee, Wis.

Wyoming February and June Examinations

Dr. W. H. Hassed, secretary of the Board of Medical Examiners of Wyoming, reports the written examination held at Cheyenne, Feb. 3 and June 2, 1930. The examinations covered 12 subjects each. An average of 75 per cent was required to pass. Three candidates were examined and passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University of Colorado School of Medicine		(1929)	89.8
Hospital College of Medicine, Louisville		(1904)	75
Creighton University School of Medicine		(1910)	85.8

Dr. Hassed also reports 4 physicians licensed through reciprocity with other states and 1 by endorsement of credentials at the same meeting. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Chicago Homeopathic Medical College		(1902)	Nebraska
Creighton University School of Medicine		(1915)	Nebraska
Univ. of Nebraska Coll. of Med.		(1927)	S. Dakota, (1929) Nebraska

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Western Reserve University School of Medicine		(1894)	Dip. End.

Minnesota April Examination*

Dr. E. J. Engberg, secretary of the Board of Medical Examiners of Minnesota, reports the oral, written and practical examination held at Minneapolis, April 15-17, 1930. The examination covered 12 subjects and included 60 questions. An average of 75 per cent was required to pass. Forty-two candidates were examined and passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University of Georgia Medical Department		(1928)	87.4
Northwestern University Medical School		(1928)	90.6, (1929) 89.5, 92.1, (1930) 92
Rush Medical College		(1930)	91.6
University of Maryland School of Medicine		(1928)	91.1
Harvard University Medical School		(1928)	91.2
University of Minnesota Medical School		(1929)	86.4* 90.1,* 90.2,* 90.2,* 92.3,* 94.2, (1930) 85.4, 85.6, 86.3, 87.5, 89.2,* 89.5, 90.1,* 90.2,* 90.2, 90.4, 91.2, 91.3, 92, 92.3, 93.1,* 93.2, 93.4*
St. Louis University School of Medicine		(1929)	91.4
Creighton University School of Medicine		(1929)	87.5, 88.4
Eclectic Medical College of Ohio		(1926)	88.1
Ohio State University College of Med.		(1925)	88.2, (1928) 86
University of Pennsylvania School of Med.		(1927)	91.3, (1928) 89.5
University of Pittsburgh School of Medicine		(1928)	85.3
Medical College of the State of South Carolina		(1928)	92
University of Wisconsin Medical School		(1928)	94.6

Dr. Engberg also reports 5 physicians licensed through reciprocity with other states and 2 by the endorsement of National Board credentials. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University Medical School		(1924)	Illinois
Creighton Univ. School of Med.		(1917)	Missouri, (1929) Nebraska
University of Virginia Department of Medicine		(1926)	Virginia
University of Pittsburgh School of Medicine		(1928)	Penna.

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement of
University of Michigan Medical School		(1928)	N. B. M. Ex.
University of Pennsylvania School of Medicine		(1925)	N. B. M. Ex.

* This applicant has received an M.B. degree and will receive an M.D. degree on completion of one year's internship in a hospital.

Book Notices

INFANT NUTRITION: A TEXTBOOK OF INFANT FEEDING FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By William McKim Marriott, B.S., M.D., Professor of Pediatrics, Washington University School of Medicine. Cloth. Price, $5.50. Pp. 375, with 53 illustrations. St. Louis: C. V. Mosby Company, 1930.

Apparently the only serious unfavorable criticism that might be made of this new contribution to infant nutrition relates to the typography of the volume. The paper is not up to the quality of the material printed on it, the type column is too wide, and the size of the book is inconvenient. The book purports to be a summary of present-day knowledge concerning the nutritional requirements of infants under normal pathologic conditions. It therefore concerns itself with growth and development, the metabolism of various ingredients of food, vitamins, the study of the stool, breast feeding, artificial feeding, the various types of substances used in feeding, disturbances resulting from malnutrition and bad feeding, and nutritional disturbances from other causes. Special chapters are, of course, devoted to highly important topics such as rickets, tetany, scurvy, disturbance of the acid-alkali balance, and the nutrition and development of the teeth. The author's style is simple, direct and above all graphic, so that he gives accurate pictures of the conditions with which he is concerned, and explicit instructions when these are available. It is taken for granted that the book is written for the medical student and the practitioner, so that it is unnecessary for the author to expand his text unduly by needless definitions or explanations. As might be anticipated, Dr. Marriott makes available fully adequate discussions of the original contributions which he himself has made to the field of nutrition. His chapter on vitamins gives within a few pages practically all that it is essential for the practitioner to know in this field. His judgments are unusually sound and conservative. He makes clear the various methods of treating cow's milk for proper use in infant feeding. He speaks directly to the point regarding commercially prepared infant foods. In the brief period since it was first made available, this book has acquired an extraordinary popularity. Perhaps the publisher will find it possible in the preparation of future editions to provide a volume more nearly approaching modern knowledge of typography.

UMSTIMMUNG ALS BEHANDLUNGSWEG. Vortragsreihe, gehalten zu Wiesbaden veranstaltet vom Wiesbadener Ortsausschuss für das ärztliche Fortbildungswesen in Preussen (Vorsitz. Prof. Dr. Determann, Schriftf. Dr. Strakosch) vom 31. März bis 5. April 1930. Herausgegeben von Prof. Dr. Determann. Paper. Price, 16 marks. Pp. 262, with 34 illustrations. Leipzig: George Thieme, 1930.

This title, which literally means "change of tone or pitch as therapeutic method," might be more freely translated as "alterative therapy." The book is a symposium chiefly on "nonspecific cell activation" by numerous prominent German students of the subject, each of whom reports the degree to which these newer methods have been found helpful in his particular field. It is led by Wolfgang Weichardt, who takes a wide view of "Umstimmungs-therapy," including in it not only sensitization but also desensitization, used, for example, in allergic conditions. He shows by experimental muscle curves how minute amounts

of protein destruction products as well as colloidal metals may markedly increase the activity of cells. He also shows that pathogenic micro-organisms may be activated in their growth by similar means. In infectious diseases, therefore, the problem of nonspecific immunization is to stimulate to the highest possible degree the defensive processes without activating the growth of the micro-organisms. Ferdinand Hoff brings out the regular biphasic character of these reactions: fever, leukocytosis and acidosis, followed by reduction of temperature and leukocytes and alkalosis, and that these are nothing more or less than centrally induced changes in the vegetative nervous system in the direction of sympatheticotonia during the first phase, and parasympatheticotonia during the second phase. Alfred Schittenhelm emphasizes the high degree to which success with this method depends on the individual reactivity of the patient; and Hermann Köninger, that not only the dose and its frequency of repetition but also most especially the time in the disease process when these methods are resorted to may determine success or failure. Then there follow chapters on the alterative value of the various therapeutic agencies, such as diet, mineral waters, hydrotherapy, electricity, radiation, climate, endocrines, proteins, lipoids, other medicines, and psychotherapy, in connection with some of which there is a tendency to interpret the term "umstimmung" perhaps somewhat too liberally. The rest of the book is taken up with the discussion of the application of this therapy to the diseases of the various organs and systems by recognized clinical specialists. Enough has perhaps been cited to show that this symposium affords one the privilege of brief but intimate contact with some of the latest therapeutic hypotheses agitating some of the foremost minds of the "land of thinkers."

TWO THOUSAND YEARS OF SCIENCE: THE WONDERS OF NATURE AND THEIR DISCOVERERS. By R. J. Harvey-Gibson, C.B.E., D.L., M.A. Cloth. Price, $4. Pp. 362, with 121 illustrations. New York: Macmillan Company, 1929.

In recent years there have been numerous efforts to popularize the various sciences and to convey to the lay reader the information possessed by specialists in various fields. There have been many interpretations of medical science but less often have works appeared on such fundamental subjects as astronomy, physics, geology and practical biology. Professor Gibson has endeavored to cover these fields, using a method of approach that is chronological and historical and writing with a feeling for public interest that is well nigh journalistic. Unfortunately, he finds it impossible to portray chemistry or biochemistry without numerous specimens of formulas and diagrams which can only confuse rather than aid the average reader.

ELEMENTARY PRACTICAL BIOCHEMISTRY. By W. A. Osborne, Professor of Physiology, University of Melbourne, and W. J. Young, Associate Professor of Biochemistry, University of Melbourne. Third edition. Cloth. Price, 12/6. Pp. 154. Melbourne: W. Ramsay, 1930.

This elementary textbook is intended as a preclinical companion volume to Ivan Maxwell's "Clinical Biochemistry." Each "lesson" gives a brief "theoretical" discussion of the subject matter followed by the most elementary qualitative laboratory experiments, many of which are misleading because of the qualitative character of the work and the brevity of the theoretical presentation. The authors present a great array of facts and tests in 1, 2, 3 and a, b, c orders. Almost no experimental evidence is cited to support the theoretical conclusions given. The text is too elementary for the class A schools in the United States.

PERSONAL AND COMMUNITY HEALTH. By Clair Elsmere Turner, M.A., Dr.P.H., Professor of Biology and Public Health in the Massachusetts Institute of Technology. Third edition. Cloth. Price, $2.75. Pp. 443, with 62 illustrations. St. Louis: C. V. Mosby Company, 1930.

Turner's book is well known to teachers of hygiene in secondary schools and in colleges. Both personal and community health are discussed. The material on the former is sufficiently complete to serve as a basis for a college course, although the discussion of hygiene of reproduction, difficult at any time to present, would be more useful if some of the details had been omitted. The part of the book dealing with community health is, on the whole, excellent, particularly those chapters dealing with school hygiene, industrial hygiene and public health administration. In the discussion of immunity, Ehrlich's side-chain theory has been given in some detail. In view of the present tendency to get away from such a fantastic representation of physiologic processes, it would seem unnecessary to retain so much of the material. It is unfortunate that only d'Herelle's conception of the bacteriophage is given as certainly it is not accepted by all workers in this field. Another controversial point is in regard to the cause of the common cold. It seems to be true, however, that not all colds are infectious nor are they all contagious. Anaphylaxis is a difficult subject to present even to advanced students. Perhaps less space could have been given to this and more to the subject of phagocytosis. On the whole, however, the book is an excellent one to put into the hands of college and secondary school students.

HANDBUCHEREI FÜR DAS GESAMTE KRANKENHAUSWESEN. Herausgegeben von Adolf Gottstein. Band I: Krankenhaushau. Bearbeitet von R. Schachner, H. Schmieden und H. Winterstein. Band II: Fachkrankenhäuser. Bearbeitet von K. Biesalski, H. Eckhardt, W. Gottstein, S. Hammerschlag, W. Mohitz, H. Ulrici und K. Wickel. Paper, 26 marks and 16 marks. Pp. 344, with 244 illustrations and pp. 266, with 73 illustrations. Band III: Sondereinrichtungen im Krankenhaus. Bearbeitet von H. Braun, K. W. Clauberg, usw., usw. Paper, 25 marks. Pp. 396, with 55 illustrations. Band V: Technik im Krankenhaus. Bearbeitet von J. Diehl, F. Eckhardt, J. Fichti, E. Seligmann, W. von Sellin und F. H. Thies. Paper, 22.40 marks. Pp. 310, with 75 illustrations. Band VI: Ernahrung Diatküchen, Kostformen. Bearbeitet von L. Kuttner, K. Isaac-Krieger und D. Kwilecki. Paper, 10.40 marks. Pp. 143, with 11 illustrations. Berlin: Julius Springer, 1930.

The German medical profession has made available a system for practically every aspect of medical practice and now offers a systematic guide to the building and control of the hospital. This appears in six volumes. The first volume deals with the general hospital; the second with special hospitals; the third, with operating rooms, x-ray rooms, pathologic and serologic departments, medical and general libraries, and similar special features of all hospitals. The fourth volume has not yet been made available. The fifth volume concerns the organization and technic of hospital conduct, and the final volume deals with nutrition and dietetics. As might be expected, each of the contributors has done his utmost to cover his subject fully. For those workers in the hospital field who can read German, the volumes will be replete with a vast amount of valuable advice and suggestions.

THE DEVIL: AN HISTORICAL CRITICAL AND MEDICAL STUDY. By Maurice Garcon and Jean Vinchon. Translated by Stephen Haden Guest from the sixth French edition. Cloth. Price, $3.50. Pp. 288. New York: E. P. Dutton & Company, Inc., 1930.

The idea that an evil demon of some sort might be concerned with human diseases and responsible for most troubles has existed since the beginning of man's life upon this earth. The French philosophers who contribute to this study show how the devil belief has been invariably linked with magic and mystery, and how modern psychologists have recognized the relationship of this belief to mental disturbances. Chapters on demoniacal madness and exorcism of devils conclude the work. Recognizing the great place played by the devil in many religious beliefs, the authors conclude with a recognition of a desirable combination of medical and religious efforts in freeing men from such beliefs.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Herausgegeben von W. Kolle, R. Kraus und P. Uhlenhuth. Band X, Lieferung 43: Methoden der Tumorforschung. Von Prof. Dr. O. Teutschlaender und Prof. Dr. R. Werner. Einrichtung von Instituten und Laboratorien. Von Prof. Dr. L. Haendel. Mobile bakteriologische Laboratorien. Von Prof. Dr. R. Doerr. Third edition. Paper. Price, 15 marks. Pp. 637-800, with 107 illustrations. Jena: Gustav Fischer, 1930.

Methods of investigation of tumors are here discussed by two well known Heidelberg workers. Their article includes much useful information and does not give disproportionate space to trivial and discredited items. The construction and equipment of bacteriologic laboratories, topics of perennial interest, are dealt with by Haendel clearly and broadly but, as natural, with a strong Teutonic slant. Mobile bacteriologic laboratories, so important in war times and for certain kinds of exploring expeditions and epidemiologic investigations, are treated adequately by Doerr.

CONGENITAL CLUB-FOOT (TALIPES EQUINOVARUS). By E. P. Brockman, M.Chir., F.R.C.S., Orthopædic Surgeon, Westminster Hospital. Cloth. Price, $4. Pp. 110, with 92 illustrations. New York: William Wood & Company, 1930.

Congenital clubfoot is a common condition. The causes and treatment are still under discussion. The author presents the various theories of etiology. He believes that the cause is a failure of development of the structures of the foot independent of any extrinsic influences. This results in subluxation of the astragalocalcaneoscaphoid joint and shortening of the muscles that control the socket for the head of the astragalus. He describes pathology, anatomy and various types of deformity. The treatment of various types and at different ages is discussed. The subject matter is well chosen and the sequence is excellent. The illustrations are well selected and executed. There is a disagreement with the author's position concerning early treatment. It is a book that should be read by every orthopedic surgeon and can be read by the obstetrician and general practitioner with benefit. This book was awarded the Robert Jones gold medal given by the British Orthopedic Association.

ERGEBNISSE DER SPORTÄRZTLICHEN UNTERSUCHUNGEN BEI DEN IX. OLYMPISCHEN SPIELEN IN AMSTERDAM, 1928. Herausgegeben von F. J. J. Buytendijk. Paper. Price, 12 marks. Pp. 230, with 92 illustrations. Berlin: Julius Springer, 1929.

In this volume the author cumulates some of the information concerning the condition of the body and the health of the athlete arising from studies of the athletes in the Olympic games held in Amsterdam in 1928. In those games particular provisions were made for careful study of the athletes before and after various contests were undertaken and some significant facts were established concerning the effects of athletics on the heart, the blood pressure and the condition generally. Of particular importance was the fact that the hearts of athletes are not usually enlarged but indeed are found to be somewhat smaller immediately after participation in athletic efforts. The book is illustrated with innumerable diagrams and roentgenograms which bring out fully the facts that have been mentioned.

PROSTHETIC DENTISTRY: AN ENCYCLOPEDIA OF FULL AND PARTIAL DENTURE PROSTHESIS. By Ira Goodsell Nichols, D.D.S., Lieutenant Commander, DC—V(S), USNR, Special Lecturer and Instructor in Dental Prosthesis, Dental Department, United States Naval Medical School, Washington, D. C. With collaboration of forty-five authorities. Cloth. Price, $12.50. Pp. 687, with 833 illustrations. St. Louis: The C. V. Mosby Company, 1930.

This book cannot be properly classed as a treatise on prosthetic dentistry, as it refers only to dentures, omitting crown and bridge work, which is definitely a part of prosthetic dentistry. Nor should it be called an encyclopedia, but rather a collection of articles by a miscellaneous group of forty-five teachers, practitioners and commercial men, ranging from a few excellent teachers to a number who might be classed as unknowns. The chapter headings suggest an orderly plan, but there is so much diversity of opinion that one would soon be lost if he should undertake to use this as a practical guide. It is doubtful whether any single contributor would approve of a majority of the articles selected from the writings of the others. The reading of such a book leaves the dentist in much the same position as a dental student would be at the close of a course of lectures given by forty-five different men. Most of the illustrations are from previously published articles, or from dental supply house catalogues.

CLINICAL BIO-CHEMISTRY. By Ivan Maxwell, M.D., B.S., M.Sc., Lecturer in Physiology and Clinical Bio-Chemistry, University of Melbourne. Second edition. Cloth. Price, $3.60. Pp. 269, with illustrations. Melbourne: W. Ramsay, 1930.

This work is intended primarily for the medical students at Melbourne University. It presents in a well organized fashion many of the qualitative and quantitative methods in vogue in clinical laboratories. Renal efficiency is well presented from the points of view of urine formation, nitrogen retention in blood, comparison of the blood chemistry and total excretion of urea, and lastly the renal elimination tests by phenolsulphonphthalein. Glycosuria and pancreatic efficiency tests are treated in separate chapters, but the quantitative methods for urinary dextrose are old and unreliable. However, a good titration method is recommended for the blood sugar estimations. Acidosis and alkalosis are treated in a clear and concise manner. Both qualitative and quantitative tests for determining hepatic efficiency are discussed in some detail. In no cases are the methods discussed critically as to reliability and rapidity. At the close of each chapter, a list of references to authorities is given.

HEREDITY IN MAN. By R. Ruggles Gates, Ph.D., LL.D., F.L.S., Professor of Botany in the University of London (King's College). Cloth. Price, $6. Pp. 385, with 87 illustrations. New York: Macmillan Company, 1929.

This volume is not a new work but a complete revision from a more modern point of view of the author's previous work on "Heredity and Eugenics." In his preface he points out that contributions to heredity by modern medical writers are more scientific than were those of the past and that therefore the scientific progress of the subject is more rapid. The present edition covers first the general aspects of the subject, then the inheritance of anatomic abnormalities, and then blood changes, metabolic defects, allergic disturbances, special defects, mental differences and racial crossings. There is a good reference bibliography and an index. The book is also intelligently illustrated. The reader who wishes a ready reference to current research will find it here. Many topics are considered too briefly for the advanced student. There is, furthermore, no concession to the ignorance of the general reader. The book will be useful to medical and other students as a guide.

REPORT OF THE INTERNATIONAL CONFERENCE ON GOITER IN BERNE, AUGUST 24-26, 1927. Edited by the Swiss Goiter Commission. Paper. Pp. 537, with illustrations. Berne: Hans Huber, 1929.

The conference here reported was held in Berne, Aug. 24 to 26, 1927. The American translation became available late in 1929. Led by Professor Aschoff, experts from all over the world considered various special aspects of the goiter problem. Thus the leaders on pathologic anatomy were Aschoff, Wegelin and Marine, on pathologic physiology Plummer, Breitner and de Quervain, and on etiology and epidemiology Bérard, McCarrison, Galli-Valerio and Bircher. Finally the discussion on prophylaxis was opened by von Jauregg, Muggia and Silberschmidt. The participants included several hundred physicians representing all the great nations with approximately twenty-five from the United States. The report here reviewed was prepared by Drs. S. D. and Virginia C. Van Meter. As might have been anticipated, this conference ventilated every possible aspect of the subject and every reasonable point of view and reached no certain conclusion. Neither did it establish any point not previously established. It did serve to confirm the view that pathologic forms of goiter are more frequent where simple goiter is more frequent and that the prophylactic use of iodine lowers the incidence of simple goiter. The statistical data and the exhibits were exceptionally complete.

THE RIGHT HONOURABLE SIR THOMAS CLIFFORD ALLBUTT, K.C.B., M.A., M.D., F.R.C.P., F.R.S., Hon. M.D., D.Sc., D.C.L., LL.D., Regius Professor of Physic in the University of Cambridge. A Memoir. By Sir Humphry Davy Rolleston, G.C.V.O., K.C.B., M.A., Regius Professor of Physic in the University of Cambridge. Cloth. Price, $5. Pp. 314, with 3 illustrations. New York: Macmillan Company, 1929.

The name of Allbutt is familiar to most of the medical profession of the world primarily because he practiced as a physician for more than half a century. He attained one of the leading positions in medical practice available in the world. He contributed notably to progress in medical science and he was equally known for his contributions to medical history and to medical literature. The consideration of his life by Sir Humphry Davy Rolleston is written *con amore*. Unfortunately the author has adopted a chronological approach to the subject rather than the form of consideration which deals with the various aspects of Sir Thomas Allbutt's work that have been mentioned. Thus, the biography is factual rather than critical. Among the particularly interesting accomplishments of the subject of this biography are the introduction of the clinical thermometer, the preparation of a system of medicine which achieved world recognition, the delivery of numerous philosophical addresses which served to define the trend in the development of medicine, investigations in the field of medical history leading to the publication of several books of perma-

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nent value, the publication of a book on medical writing, now in its third edition, which still commands respect and admiration, and, most of all, the setting of a standard of medical practice both as a general practitioner and as a consultant, which have served and which may well continue to serve as models through the centuries. The biography is excellently annotated, so that it becomes possible for any reader who cares to pursue any aspect of the subject to make references to any special phase of the subject that may attract him. Throughout the work appear the names of leaders of medicine in Great Britain, on the continent and in the United States with whom the life of Sir Clifford Allbutt came in contact. Unfortunately, his letters were few; but such as have been available and as are incorporated in his life have the interest that might be expected from their writer. Here is a biography which every physician interested in the history of our times will find exceedingly readable and informative.

HANDBUCH DER INNEREN SEKRETION: EINE UMFASSENDE DARSTELLUNG DER ANATOMIE, PHYSIOLOGIE UND PATHOLOGIE DER ENDOKRINEN DRÜSEN. Herausgegeben von Dr. Max Hirsch. Band II, Lieferung 8: Entwicklung und Wachstum. Von Prof. Dr. F. Gudernatsch. Paper. Price, 27 marks. Pp. 1493-1744, with 59 illustrations. Leipzig: Curt Kabitzsch, 1930.

This is an excellent monograph on growth and development, with especial reference to the rôle of the endocrine glands in these processes. Years ago the authors did some good pioneering experimental work in this field, especially on the rôle of the thyroid and the thymus in growth. In this monograph the entire literature is covered in a thoroughly critical review. The list of references occupies forty-four pages. The gaps in our knowledge are indicated. At present the weakest link is the rôle of the thymus. The author calls the thymus a "growth gland." If this is so, it probably applies at least for mammals only in the early stages of interuterine life, when accurate experimental attacks on the problem are difficult. The monograph will be useful to internists, pediatricians and biologists.

YOURSELF, INC.: THE STORY OF THE HUMAN BODY. By Adolph Elwyn, Department of Neurology, Columbia University. Cloth. Price, $3.50. Pp. 320, with 70 illustrations. New York: Brentano's, 1930.

This volume constitutes another attempt to give the public information in a simple form concerning the conception, the construction and the function of the human body. The book suffers, as do almost all such works, by the necessity for an extensive new vocabulary. The work is along the lines of an excellent series of articles now appearing in *Hygeia*, entitled "Simple Lessons in Human Anatomy." Because of its somewhat technical language and concentrated character, this book is better fitted for the experienced reader than for the average man.

SEXUAL REFORM CONGRESS, JULY 1-5, 1928, COPENHAGEN. Proceedings of the Second Congress of the World League for Sexual Reform. Editors: Dr. Hertha Riese, Frankford/Main, and Dr. J. H. Leunbach, Copenhagen. Paper. Price, 20.00 Rmk. Pp. 307. Copenhagen: Levin & Munksgaard, 1929.

The chief subjects of discussion at the second congress on sexual reform, held in Copenhagen in 1928, were the general subject itself, sexual pedagogy, birth control and legal aspects. Representatives of Russia discussed some of the remarkable experiments now being tried by the soviets. Much was said also of companionate marriage, free love and similar topics. Most of the papers are in German.

APPLIED BACTERIOLOGY FOR NURSES. By Charles Frederick Bolduan, M.D., Director, Bureau of Health Education, Department of Health, City of New York. Sixth edition. Cloth. Price, $2. Pp. 251, with 83 illustrations. Philadelphia: W. B. Saunders Company, 1930.

This edition differs only slightly from the fifth. Material on such subjects as undulant fever, Calmette's tuberculosis vaccine, tularemia and diphtheria toxoid has been brought down to date. Of the many books intended for use in the schools of nursing, this one is among the best. It is impossible to present the subject of bacteriology in so few pages adequately except by omitting many important things or by making extremely brief discussions. The latter is the method here followed.

Miscellany

MODERN TENDENCIES IN ANESTHESIA

In a recent article on requirements of substances used for basal anesthesia, Lendle[1] has discussed the modern tendencies in anesthesia. The attempt to improve gas anesthesia has led to a new method of dosage for nitrous oxide anesthesia. Experiments with other gases led to the use of acetylene and ethylene, but on account of their explosiveness these gases have not been adopted for general use. The renewed interest in rectal and intravenous methods of anesthesia was mainly due to the introduction of a new product, tribrom-ethanol, introduced as "Avertin," and of a barbital derivative of secondary butylbrompropenylbarbituric acid, introduced under the therapeutically suggestive name "Pernocton." Attempts to produce a surgical general anesthesia with these preparations proved unsatisfactory and so they were combined with inhalation anesthetics, especially with ether. Thus, the main object of this method, namely, to do away with inhalation masks, was defeated; however, the result was a new interest in the problem of combination anesthesia. In a combined anesthesia, the basal anesthetic is of primary significance. The definition of basal anesthesia as given by the author implies that it is more than merely preliminary to anesthesia, which formerly was usually attained by a morphine injection, in that it also is the main factor in the subsequent production of general anesthesia.

In the main part of the article, Lendle discusses first in general the requirements of a basal anesthetic, namely, the velocity of its action, its duration, the regulability or control and, finally, the breadth; that is, the difference between the anesthetic and the lethal dose. Then he gives his present opinion as to what extent avertin and pernocton fulfil or fail to fulfil these requirements. Avertin is, even following rectal administration, quickly absorbed, so that the anesthetic action reaches the maximum within several minutes. This he thinks is an advantage, but points out that the short duration of its anesthetic action is not desirable, because a basal anesthetic should produce an anesthesia of a reasonable duration and of an even depth. Regarding the control of avertin, the author states that the possibility of an indirect modification of the anesthetic action by restoratives, by glycuronic acid or by other substances has not proved satisfactory, either in the animal experiment or in the practical application. Because avertin is effective only for a short time, overdosage is necessary to obtain a sufficient duration of the anesthesia and thus the difference between the anesthetic and the lethal dose is very slight. In a combination anesthesia of avertin with ether, the anesthetic as well as the lethal actions of both components are merely additive. Mixtures in certain definite proportions show a slight reduction in the lethal action. However, it is not possible to increase the breadth of the anesthesia greatly by combination of avertin with other substances. This has been asserted wrongly by some investigators.

The author's final evaluation of avertin as a basal anesthetic is as follows: The short duration of the anesthesia and the overdosage that is necessary are proof that avertin does not meet the requirements of an agent for basal anesthesia; however, it is suited for use as an agent for preliminary anesthesia. It has not been proved as yet that by combining avertin with other substances an essential improvement in the breadth of the anesthesia can be obtained. In evaluating pernocton the author criticizes the slowness of its anesthetic action, and the extremely long duration. In order to improve the velocity and at the same time to decrease the duration, intravenous injection has been recommended. But if alkali has been added in order to improve the solubility, then there exists danger of thrombosis. As to the breadth of pernocton anesthesia, it has to be stated that there really is none. Animal experiments proved that absence of all reflexes cannot be produced with doses that are not already lethal, and in the light anesthetic action the breadth is likewise not very marked. However, because of the long duration of pernocton anesthesia, comparatively small doses may be given. A direct control is of course just as impossible in the case of pernocton as in avertin, and indirect control of

1. Lendle, L.: Klin. Wchnschr. **9**: 1609 (Aug. 30) 1930.

pernocton by antagonistic analeptica is also ineffective. The author thinks that pernocton is even less suitable for basal anesthesia than avertin. Disadvantages are especially that total anesthesia cannot be effected with it, and that it gives rise to disgreeable complications and after-effects. However, because of the long duration of pernocton anesthesia, it may be suitable for lighter degrees of basal anesthesia.

Medicolegal

Evidence Admissible to Prove Criminal Abortion

(People v. Rongetti (Ill.), 170 N. E. 14)

Amante Rongetti was convicted of manslaughter on the basis of evidence tending to show that he had committed a criminal abortion. He appealed to the Supreme Court of Illinois. A coroner's physician testified that he made an autopsy on the body of the deceased and that he found a triangular punctured wound, about the size of the body of a fountain pen, on "the posterior fundus of the uterus," which was practically healed. In his opinion, death was caused by septic peritonitis due to an abortion, and the abortion was not necessary to preserve the life of the deceased. An embalmer testified that in embalming the body he made the puncture with his trocar. Rongetti testified on his own behalf, denying that he punctured the uterus, or that he performed any operation on the deceased, or that he did anything that could cause her to abort. His testimony was corroborated by the head nurse of the hospital. There was evidence tending to show that abortion might have resulted from violence to which the deceased was subjected prior to her admission to the hospital or from natural causes.

In the course of the trial, evidence was introduced to show that Rongetti had performed similar operations. The admission of such evidence, Rongetti claimed on appeal, was error. But, said the Supreme Court, where the intent with which an alleged offense was committed is a material element of the charge, and such intent becomes an issue on the trial, proof of former similar offenses, within reasonable limits, is admissible as tending to throw light on the intention of the accused in doing the act charged, and such evidence is competent in cases of this character. Such evidence, however, to be competent as proof of guilty knowledge, must show that the alleged similar offenses were in fact criminal offenses. Evidence of similar offenses is not admissible to prove that the defendant committed the act charged; it is to be considered only in determining the intent with which the act was done, when the jury is satisfied by other testimony that the defendant committed the act. The trial court erred, said the Supreme Court, in denying the motion of Rongetti to strike out the answer of a witness who testified that she had seen similar operations, and in allowing her to testify to her conclusion and to make general comparisons. She should have been required to testify as to the details of each of the operations to which she referred, so that the court might be able to judge as to whether or not such operations were criminal and tended to show a guilty intent in doing the act charged by the indictment.

Two physicians, testifying as experts, in answer to a hypothetical question gave it as their opinions that the hypothetical person described in the question came to her death as the result of an abortion and that such abortion was not necessary to preserve her life. Rongetti claimed that the opinions as given were incompetent and inadmissible and that these witnesses were allowed by the court to invade the province of the jury and to determine questions which the jury itself was impaneled to decide. The Supreme Court quoted with approval the principles laid down by it in *Fellows-Kimbrough* v. *Chicago City Railway Co.*, 272 Ill. 71, 111 N. E. 499, 502, as follows:

> Where there is a conflict in the evidence, as in this case, as to whether or not the party suing was injured in the manner charged, it is not competent for witnesses, even though testifying as experts, to give their opinions on the very fact the jury is to determine. Whether or not the collision or accident in this case caused traumatic neurasthenia, in the defendant in error, or caused the tumor in her breast, are ultimate facts upon which the jury must make their findings. It is no more proper, legally, for physicians to settle those questions for the jury by their direct answers than it would be for a motorman of another street car company to settle the question of negligence by testifying in broad terms that the plaintiff in error was guilty of negligence because its motorman failed to cut off the power by use of the canopy switch in time to prevent the collision. The rule in such cases is not different where hypothetical questions are put to the expert witnesses. A physician may be asked whether the facts stated in a hypothetical question are sufficient, from a medical or surgical point of view, to cause and bring about a certain condition or malady, or he may be asked whether or not a given condition or malady of a person may or could result from and be caused by the facts stated in the hypothetical question; but he should not be asked whether or not such facts did cause and bring about such condition or malady. [Citations omitted.] In cases where there is no dispute as to the manner and cause of the injury, and no dispute that there was an injury sustained by reason of the acts of which complaint is made, this court has held that a physician may then directly testify that a later malady was or was not caused by the accident or original injury, upon the same principle that he may testify that death resulted from a certain wound. [Citations omitted.]

The rule stated has never been departed from in any case in which the question was raised. The trial court in the present case was therefore in error, said the Supreme Court, in allowing the witnesses to invade the province of the jury and to testify as to ultimate facts which were for the jury to determine in this case, because there was a conflict in the evidence as to whether or not the deceased was injured in the manner charged and there was a dispute as to the manner and cause of the injury to deceased, if any, and also a dispute as to whether or not there was an injury sustained by her by reason of the acts of Rongetti of which complaint was made.

For the reason stated and others, the case was reversed and remanded.[1]

Insurance. Accident: Gonorrheal Ophthalmia. — The plaintiff suffered the loss of the sight of an eye, which became infected as a result of wiping his face on a towel on which there were gonococci or other germs. He brought suit on an insurance policy that insured against injuries "effected solely through external, violent, and accidental means," and a verdict and judgment were rendered in his favor. On appeal, the judgment was reversed. There is nothing in the evidence, said the Court of Appeals of Georgia, to indicate that the injury complained of was effected solely from external, violent and accidental means within the meaning of the policy sued on. The evidence does not indicate that the use of the towel effected any violent, external injury to the eye, nor that the eye had already been thus injured so as to expose it to infection from the ordinary use of the towel. Since all germ diseases, whether contagious or infectious, are contracted by taking within the body the disease organisms, an insurer might be liable for the contracting of any such diseases, whether through the mouth, nose, eye, throat or lungs, by reason of any ordinary exposure, were it not for the provision in the accident policy, which distinguishes it from a health policy, that the company is liable only for accidental injuries effected solely through external, violent means. So far as the case made out by the plaintiff showed, the gonococci became lodged and developed in the natural, normal tissues of the body, without being in any wise effected through external violent injury. Consequently, there could be no recovery on the policy sued on.—*Prudential Ins. Co. of America v. Herndon (Ga.), 151 S. E. 399.*

Society Proceedings

COMING MEETINGS

American Academy of Physical Therapy, Boston, November 12-14. Dr. Thomas L. Smyth, 111 North Eighth Street, Allentown, Pa., Secretary.
American Society of Tropical Medicine, Cleveland, December 27-30. Dr. Edwin Peterson, U. S. Naval Hospital, Washington, D. C., Secretary.
American Student Health Association, New York City, December 29-30. Dr. D. F. Smiley, Cornell University, Ithaca, N. Y., Secretary.
Radiological Society of North America, Los Angeles, December 1-5. Dr. L. S. Trostler, 25 East Washington Street, Chicago, Secretary.
Society of American Bacteriologists, Boston, December 29-31. Dr. James M. Sherman, Cornell University, Ithaca, New York, Secretary.
Southern Medical Association, Louisville, Ky., November 11-14. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.
Southern Surgical Association, Lexington, Ky., December 9-12. Dr. Robert L. Payne, 142 York Street, Norfolk, Va., Secretary.
Western Surgical Association, Kansas City, Mo., December 5-6. Dr. Frank R. Teachenor, 306 E. Twelfth St., Kansas City, Mo., Secretary.

1. This case is again before the Supreme Court of Illinois, Rongetti having appealed from another conviction of manslaughter.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics & Gynecology, St. Louis

20: 293-440 (Sept.) 1930.

*Incidence of Puerperal Infection Due to Anaerobic Streptococci. T. K. Brown, St. Louis.—p. 309.
*Use of Local Anesthesia in Gynecologic Operations. F. H. Falls, Chicago.—p. 310.
Variability of Menstrual Rhythm and Character. S. H. Geist, New York.—p. 320.
Congenital Defects of Diaphragm with Relation to Asphyxia Neonatorum: Two Cases. C. S. Harper and O. N. Andersen, Madison, Wis.—p. 324.
*Irregularities of Fetal Heart. A. S. Hyman, New York.—p. 333.
*Spirochetes in Puerperal Fever. A. F. Lash, Chicago.—p. 348.
*Ectopic Pregnancy. B. E. Urdan, Milwaukee.—p. 355.
*Vital Capacity During Last Month of Pregnancy and Puerperium. H. C. Alward, Rochester, N. Y.—p. 373.
*Gastric Juice in Pregnancy. F. Arzt, St. Louis.—p. 382.
*Contracted Pelves and Disproportion. L. S. McGoogan, Fall River, Mass.—p. 386.
Relation of Weight of Placenta, Cord and Membranes to Weight of Infant in Normal Full-Term and in Premature Deliveries. S. B. D. Aberle, A. H. Morse, W. R. Thompson and E. H. Pitney, New Haven, Conn.—p. 397.
Analysis of 124 Cases of Low Cervical Cesarean Sections. W. C. Danforth and R. M. Grier, Evanston, Ill.—p. 405.
New Rectal Ether Analgesia Apparatus. C. O. McCormick, Indianapolis.—p. 411.
Diagnostic Lipiodol Injection into Milk Ducts Followed by Abscess Formation. E. Ries, Chicago.—p. 414.
Association of Polycythemia with Occlusion of Inferior Vena Cava: Case. H. J. Tumen, Philadelphia.—p. 417.
Fetal Monstrosity: Interesting Problem in Delivery. C. B. Lull, Philadelphia.—p. 421.
Complete Inversion and Prolapse of Uterus, Adherent Placenta Attached, Shock, Reposition, Recovery. J. J. Gill, Chicago.—p. 424.

Puerperal Infection Due to Anaerobic Streptococci.—Brown asserts that puerperal infections due to ordinary pathogenic organisms in most instances are introduced infections, and infections due to anaerobic streptococci are usually endogenous. In the well organized obstetric clinic, the problem of anaerobic streptococcal infection should be a greater one than infection due to the hemolytic streptococci and other pathogenic organisms. Good technic can practically eliminate hemolytic streptococcal infections, with some exceptions, as the recent epidemic at the Sloane Hospital for Women in New York City indicates. In the present state of knowledge, anaerobic streptococcal puerperal infections will perhaps be best reduced by using some antiseptic preparation in the vagina at the beginning of and during labor.

Local Anesthesia in Gynecologic Operations.—Falls asserts that nearly every gynecologic operation can be done under local anesthesia reinforced by scopolamine and morphine. It is not the anesthesia of choice in uncomplicated cases. It is the method of choice in certain carefully selected complicated cases. The operator must be prepared to spend more time and patience in this type of operating, and deftness and gentleness in handling tissues are of paramount importance. Major abdominal operative procedures should not be attempted by the unskilled surgeon, since complications may occur that will try the skill of an experienced surgeon. Facilities for switching to general anesthesia should be available as well as the assistance of a trained anesthetist who cooperates in the management. A combination of nerve block and local infiltration is advisable in most of the work, especially the abdominal work. Premedication with scopolamine and morphine is a valuable adjunct.

Irregularities of Fetal Heart.—Study made by Hyman of the fetal heart sounds by means of the phonocardiogram has demonstrated that the occurrence of cardiac irregularities in uterine life is not an infrequent discovery. These irregularities can be divided into three general groups, the first two of which constitute about 80 per cent of all the irregularities. The first group consists of an exaggerated physiologic disturbance of the pacemaker mechanism in which a marked sinus arrhythmia develops; this condition persists throughout childhood and finally disappears at the latter end of adolescence. It has no especial clinical significance but it should be recognized in order to make an accurate differential diagnosis from the third and more serious group of irregularities. The second group of fetal arrhythmias consists of a skipping or alteration in the regular rhythm of the heart; this intermission is probably due to an intra-uterine extrasystolic arrhythmia. The general impression seems to be that the condition is relatively unimportant, as it disappears within a few days after delivery. Hyman believes that its occurrence is evidence of a hyperirritable myocardium which may be the result of improper hygiene, poor posture, or an unsuitable dietary on the part of the mother. This type of irregularity is not difficult to discover if present, and, like the first group of irregularities, it must be differentiated from the third type. The importance of the fetal irregularities lies primarily in the further investigation of the grossly perverted types of fetal heart rhythms seen in the third group. The combined attention of both obstetrician and cardiologist must be focused on the mechanism responsible for this change in the cardiovascular system of the fetus. If this condition is due to auricular fibrillation, as is suggested by graphic studies of this disease when compared to adult types of auricular fibrillation, indications as to therapy may be made and a new avenue of approach to the possible prevention of certain types of abortion may be accomplished.

Spirochetes in Puerperal Fever.—A mixed infection of spirochetes and pyogenic organisms has been observed by Lash during the puerperium. These spirochetes are different from the Vincent's or pallida forms. The spirochetal and pyogenic puerperal fever follows a characteristic pathologic and clinical course. The diagnosis is based on the character of the lochia and on the presence of spirochetes. The therapy used in this type of infection may be considered of nonspecific and probable specific nature. The importance of studying smears and the bacteriology of the lochia in puerperal infections is illustrated. It is only by such means that definite diagnosis, prognosis and therapy may be established in the study of puerperal fever.

Ectopic Pregnancy.—Urdan has analyzed 474 cases. Previous sterility does not seem to be an important factor, as only 10 per cent fall into the group classed as primary sterility. Pelvic infection is an important etiologic factor whether an inflammatory, postabortal or postpartum infection. The two most common symptoms are pain and bleeding. When coupled with shoulder pain and fainting, the diagnosis is almost absolute. Amenorrhea of five to six weeks followed by bleeding and pain is most common, but a good number of patients had a prolonged period of bleeding with the onset of the period, while many began to bleed from one to three weeks after a normal period. The amount of bleeding is less than in threatened abortion, the blood is darker, and generally it does not clot. External hemorrhage may be a manifestation of the death of the ovum and occurs when the uterus is beginning to cast off the decidua. Curettings showing only decidua may be pathognomonic of extra-uterine gestation. The temperature shows a moderate elevation, rarely above 101 F., and the pulse rate is proportionately increased, the average being from 90 to 110. The leukocyte count is of little value, though a high count does not indicate infection when this is present after severe intra-abdominal hemorrhage. The diagnosis, except in cases with severe hemorrhage, is difficult. In this series only 58 per cent were correctly diagnosed. Any change in the rhythm of the menstrual flow with bleeding and abdominal pain must make one suspect extra-uterine gestation. The sedimentation time of thirty minutes or over favors extra-uterine pregnancy rather than inflammatory adnexal disease. The Aschheim-Zondek test should prove of value in differentiating adnexal disease from extra-uterine pregnancy. Posterior colpotomy should be resorted to in differentiating pelvic abscess from hematocele. Once the diagnosis is made, operation should be immediate except in those cases in which hemorrhage has

not been profuse and the patient's general physical condition (for example, cardiac status) could be benefited by appropriate preoperative treatment. Blood transfusion, if necessary, should be done and in borderline cases should be performed to shorten the convalescence and aid in restoring the patient more rapidly to her normal status. In this series tubal ruptures were almost as frequent as tubal abortions, 40.50 per cent tubal ruptures and 48.31 per cent tubal abortions. There were fourteen deaths, or a mortality rate of 2.95 per cent. Five deaths were due to the anemia and shock attendant on severe hemorrhages; two were due to secondary hemorrhage, one to eventration, two to intestinal obstruction, and four to pulmonary complications. Three of the deaths due to primary hemorrhage and one of the deaths due to secondary hemorrhage occurred before the period when blood transfusion, as a therapeutic agent, was available.

Vital Capacity in Last Month of Pregnancy and Puerperium.—Vital capacity observations were made by Alward on sixty pregnant women. In the majority of cases there was normally a gradual reduction in the vital capacity in the last month of pregnancy. This is especially noticeable during the two weeks period before delivery. Following delivery there is a fairly sharp reduction in the vital capacity with a gradual return to normal limits, which is reached by the tenth day of the puerperium and remains so throughout the following days of the puerperium.

Gastric Juice in Pregnancy.—Arzt emphasizes that free hydrochloric acid and total acid of the stomach contents are lower in pregnancy than in the nonpregnant and that this deficiency is more marked early, at the time nausea and vomiting are most common. This absence of free acid is due to the fact that it is neutralized most likely by a regurgitation of the alkaline duodenal contents into the stomach. Caffeine citrate in these cases has a marked ability to cause an increased secretion of hydrochloric acid.

Contracted Pelves and Disproportion.—Four hundred and seventy-one cases of contracted pelves or disproportion between the pelvic canal and the child are presented by McGoogan and the method of delivery analyzed, 220 patients delivering spontaneously and 251 requiring operative intervention. The maternal mortality for the group is 0.42 per cent, both deaths being due to streptococcic septicemia. The fetal mortality for the group is 10.8 per cent, of which one third were due to intracranial hemorrhage. Surgical induction of premature labor gives results that are not inferior to other methods of delivery, the fetal mortality being lower, but the maternal mortality, owing to the risk of infection, greater. In 104 cases of cesarean section there was no mother lost and the fetal mortality was only 2.8 per cent. Craniotomy is the method of choice in those patients in whom the child has died in utero or in whom such a severe grade of infection is present that cesarean section is contraindicated.

Annals of Internal Medicine, Ann Arbor, Mich.

4: 211-342 (Sept.) 1930

*Effect of General Systemic Arteriosclerosis on Heart and Systemic Circulation. G. Fahr and J. Davis, Minneapolis.—p. 211.
*Newer Aspects in Problem of Essential Hypertension. N. M. Keith and J. W. Kernohan, Rochester, Minn.—p. 217.
*Retinal Vascular Changes in Hypertension. H. P. Wagener, Rochester, Minn.—p. 222.
*Causes of Hypertension. E. T. Bell and A. H. Pedersen, Minneapolis. —p. 227.
Undulant Fever (Brucelliasis). W. M. Simpson, Dayton, Ohio.—p. 238.
*Psittacosis: Three Cases. W. W. G. MacLachlan and H. H. Permar, Pittsburgh, and C. A. Rogers, Freeport, Pa.—p. 260.
Committee on Applied Medical Science. J. M. Anders.—p. 277.
*Healing of Tuberculosis. F. M. Pottenger, Monrovia, Calif.—p. 281.

Effect of Arteriosclerosis on Heart and Systemic Circulation.—Fahr and Davis made experiments which they feel prove that increased rigidity of the arterial system without changes in the diameter of the system causes no increase in the work of the left ventricle in expelling blood into and along the more rigid arterial system. In other words, arteriosclerosis not associated with increased blood pressure causes no increase in the work of the left ventricle. These experiments also prove that the volume flow of blood in a more rigid arterial system is as great as in a less rigid system. In other words, arteriosclerosis not associated with narrowing of the lumen of the arterial system is not detrimental to the volume flow of blood. It is possible that severe generalized arteriosclerosis may lead to a reduction in volume flow through the coronary arteries and thus aid in bringing on circulatory failure when the coronary arteries are already narrowed from severe coronary arteriosclerosis.

Newer Aspects in Problem of Essential Hypertension.—Keith and Kernohan feel that it behooves clinicians always to consider the diagnosis of a case of hypertension from the standpoint of the fundamental pathologic change. There are certain rare anatomic changes in the vascular system which give rise to hypertension, such as arteriovenous aneurysm and congenital stenosis of the isthmus of the aorta. In addition to the kidney they must think of other organs in the body as possibly being associated with the cause of hypertension. For instance, they must think of the thyroid gland and of the suprarenal gland together with tumors in the region of the latter. Also, they must think of the sympathetic nervous system, for vasoconstriction sometimes occurs in early cases of hypertension. Cases have actually been seen in which the condition has begun with vasoconstriction and in which, later, arteriolar thickening has appeared. Finally they must seek substances that will be effective in prevention of this vasoconstriction, or in its treatment when once it has developed.

Retinal Vascular Changes in Hypertension.—Wagener believes that it must be admitted that arterial constriction or spasm is the most dangerous element of hypertensive disease, that it may be the primary factor that results in arteriosclerosis, and that it is largely responsible, if not for the hypertension itself, at least for the retinal, cerebral and renal complications. It would seem that efforts should be directed especially to the discovery of the cause and to the relief of this tendency to arterial or, rather, to arteriolar constriction.

Causes of Hypertension.—The physiologic mechanisms concerned with the regulation of blood pressure in health and in disease are discussed by Bell and Pedersen; viz., the heart, the arteries and the arterioles, the capillaries, the vasomotor center, the vasomotor nerves, the depressor nerves, and the suprarenals. Hypertension has been produced experimentally in animals by pressor substances, increased intracranial pressure, removal of the depressor nerves, urinary obstruction, roentgen atrophy of the kidneys, and stenosis of the renal vein. Secondary hypertension of acute type occurs in man from physical exertion, sensory stimuli, increased intracranial pressure, and suprarenal tumors. Secondary hypertension of acute or chronic type occurs with glomerulonephritis, nephrosis of eclampsia, mercuric chloride nephrosis, polycystic kidneys, urinary obstruction, advanced amyloid disease, and degeneration of small renal arteries and arterioles. Secondary hypertension of chronic type is seldom seen except in association with renal disease. Obstruction in the renal circulation or obstruction of the outflow of urine seems to cause hypertension, probably through a reflex mechanism. Renal insufficiency alone does not cause a rise in blood pressure. Acute fulminating hypertension is probably a primary renal disease. Primary hypertension has its basis in inheritance. The defect inherited is an inferior vascular system which either reacts excessively to ordinary environmental stimuli or degenerates from inherent weakness.

Psittacosis.—Three cases of psittacosis are described by MacLachlan et al. clinically with necropsy observations in one case. The clinical picture may be one of atypical pneumonia or of a typhoidal state. The mortality occurs in the former, especially in older persons. The pneumonia is of the bronchial type, with collapse of lung, and the exudate is chiefly of phagocytic mononuclear cells. The most distinctive feature in the pneumonia is an hypertrophy and hyperplasia of the epithelial cells lining the alveoli. However, these cells do not enter into the formation of the exudate. The most recent work would indicate that psittacosis is caused by a filtrable virus. At present a diagnosis of psittacosis cannot be made without establishing contact, direct or indirect, with a parrot or other tropical bird.

Healing of Tuberculosis.—Pottenger concludes that tuberculosis heals as a result of the patient's immunity reaction. The efficiency of the immunity reaction is increased by repeated reinoculations. The effects of immunity are shown in the fol-

lowing services rendered to the host: (*a*) destruction of bacilli; (*b*) retardation of the passage of bacilli through the tissues; (*c*) elimination of bacilli through natural channels by caseation and cavity formation; (*d*) development of a state of desensitization to bacillary and nonbacillary toxins; (*e*) encapsulation or rendering inactive viable bacilli, which remain in the tissues; (*f*) ridding the body of the inflammatory products that accompany the infection, and (*g*) repair of the injury inflicted on the body by the disease. Treatment is efficacious to the extent that it is able to limit reinoculations of bacilli and bacillary protein to a minimum and create within the patient a resistance capable of coping with them as they occur.

Archives of Ophthalmology, Chicago

4: 309-452 (Sept.) 1930

Blood Picture in Keratomalacia of Adults. A. Pillat and C. S. Yang, Peiping, China.—p. 309.
Oral Infections and Relation to Diseases of Eye. H. S. Dunning, New York.—p. 315.
Trachoma and Avitaminosis. A. I. Kendall and S. R. Gifford, Chicago. —p. 322.
Glaucoma Simplex. H. C. Haden, Houston, Texas.—p. 326.
Persistent Posterior Fibrovascular Sheath of Lens Caused by Fetal Iritis. V. M. Leech, Chicago.—p. 332.
Trephining for Buphthalmos: Case Observed for Seventeen Years. C. N. Spratt, Minneapolis.—p. 338.
*Car Sickness. J. E. Lebensohn, Chicago.—p. 342.
Keratoconus: Three Cases. E. Torok and L. D. Redway, New York. —p. 348.
Permeability of Lens Capsule to Water, Dextrose and Other Sugars. J. S. Friedenwald, Baltimore.—p. 350.
Oculogyric Crises in Postencephalitic States. A. E. Bennett and J. M. Patten, Omaha.—p. 361.
Unrecognized Retinoblastoma and Pseudoretinoblastoma. M. Cohen, New York.—p. 368.
Biochemistry of Aqueous, Lens and Vitreous. P. W. Salit, Iowa City. —p. 374.

Car Sickness.—Though car sickness is based on labyrinthine irritation, it is nevertheless true, Lebensohn believes, that errors of refraction and of muscle balance predispose a person to this malady. Hence persons so affected have probably a lowered threshold for nausea, and a digestive tract especially susceptible to further depressing influences. With the advent of smoother roads and easier riding cars and automobiles, car sickness is becoming less common. Susceptible persons will be less affected if they maintain a proper gastro-intestinal tone. Errors of refraction and muscle imbalance should be corrected. It is best not to go hungry when traveling, as the empty stomach is particularly sensitive to depressing influences. In severe cases, it may be necessary to allay the psychic tension with sedatives, while, to counteract the pylorospasm that precedes the retroperistalsis, the use of atropine is indicated. The value of sodium nitrite in seasickness has not been confirmed by British investigators.

Archives of Otolaryngology, Chicago

12: 273-412 (Sept.) 1930

Otosclerosis. E. W. Hagens, Chicago.—p. 273.
Dentigerous Cyst of Upper Jaw Involving Antrum of Highmore. A. O. Freedman, Montreal, Canada.—p. 290.
*Perforation of Larynx from Tuberculous Laryngitis. M. D. Tyson, New Haven, Conn.—p. 297.
*Dentigerous Cyst of Antrum of Highmore with Unusual Characteristics. H. L. Harris and I. F. Weidlein, Cleveland.—p. 311.
Lateral Transthyroid Pharyngotomy. H. B. Orton, Newark, N. J. —p. 320.
Apparent Unilateral Absence of Sigmoid Sinus Noted at Operation. H. L. Williams, Jr., Rochester, Minn.—p. 339.
Osteitis of Petrous Pyramid of Temporal Bone Associated with Paralysis of External Rectus. I. Friesner and J. G. Druss, New York. —p. 342.
*Blood in Various Anginas. J. J. Shea, Memphis, Tenn.—p. 366.
Adenoid Sponge Holder. L. Schwartz, Jr., New York.—p. 376.
New Tonsil Forceps. M. Berger, New York.—p. 376.
Acute and Chronic Otitis Media and Sinus Thrombosis. S. J. Kopetzky, New York.—p. 377.

Perforation of Larynx from Tuberculous Laryngitis.—Seven cases of perforation of the larynx by the tuberculous process reported from 1836 to 1899 are reviewed by Tyson. Six cases reported in the same period, in which perforation of the larynx took place by a process that was probably tuberculous, but in which the evidence was not sufficiently conclusive to warrant a definite statement, are also reviewed. One case of definite tuberculous perforation of the larynx is reported. The latter is the only case reported since 1899, and the probable explanations of this are pointed out. The diagnostic points in tuberculous perforation of the larynx are discussed and are correlated with the pathologic observations.

Dentigerous Cyst of Antrum of Highmore.—The unilocular cyst seen by Harris and Weidlein completely filled the antrum, and, despite its great size, had formed no fistulous tract into either mouth or nose. There were, however, two large bony dehiscences. It contained a poorly developed supernumerary molar, indicating that the cyst had taken its origin from an aberrant tooth bud or so-called follicle. The cyst bore no direct relation to the left canine tooth, which was unerupted and missing from the arch. This tooth, anchored by a shelf of bone, lay wholly outside the cyst. This cyst was of exceptionally long growth, as evidenced by its size and the impacted canine, which normally erupts between the tenth and thirteenth years of life. It may be concluded, therefore, that the shelf of bone that anchored the tooth so securely was gradually driven into the side of its root by the slowly forming cyst over a long period of years.

Blood in Various Anginas.—Shea asserts that the toxins of the various anginas may stimulate or paralyze the hematopoietic system. He reports six cases.

Archives of Physical Therapy, X-Ray, Radium, Chicago

11: 455-510 (Sept.) 1930

Problem of Teaching Physical Therapy and Management of Hospital Departments. N. E. Titus, J. C. Elsom, F. H. Ewerhardt, D. Kobak, E. M. Kime, J. E. G. Waddington, J. S. Hibben, A. F. Tyler, G. B. Lake and A. Bachem.—p. 455.
Rational Teaching Methods in Physical Therapy. D. Kobak, Chicago. —p. 460.
Relation of Attending Physicians to Physical Therapy Department of Hospital. J. S. Hibben, Pasadena, Calif.—p. 464.
Accuracy in Measurement of Roentgen-Ray and Radium Doses. U. V. Portmann, Cleveland.—p. 470.
Physiotherapy in Relation to Surgery. R. J. Behan, Pittsburgh.—p. 476.
Magic Ultraviolet. W. T. Anderson, Newark, N. J.—p. 482.
Comparison of Biologic Effectiveness of Radiation from Mercury Vapor Lamp and from Two Arc Lamps as Made by Screened Photoelectric Cell. T. C. Angus.—p. 484.

Canadian Public Health Journal, Toronto

21: 423-474 (Sept.) 1930

Communicable Diseases and General Hospital. F. W. Jackson, Winnipeg.—p. 423.
Present Status of Child Hygiene in Ontario. J. T. Phair, Toronto. —p. 428.
International Conference of 1929 on Nomenclature of Causes of Death. E. S. MacPhail, Toronto.—p. 432.
Recent Advances in Laboratory Diagnosis and Specific Treatment of Pneumonia. M. H. Brown, Toronto.—p. 444.
Urban Sanitation. A. E. Berry, Toronto.—p. 451.

Delaware State Medical Journal, Wilmington

2: 151-166 (Sept.) 1930

Mental Hygiene Clinic in Delaware. P. F. Elfield, Farnhurst.—p. 154.

Journal of Allergy, St. Louis

1: 483-568 (Sept.) 1930

Specificity of Pollen Allergens. G. Piness and H. Miller, Los Angeles. —p. 483.
*Patch Test in Contact Dermatitis (Dermatitis Venenata). M. A. Ramirez and J. J. Eller, New York.—p. 489.
Allergy Considered as Special Type of Alkalosis. H. Beckman, Milwaukee.—p. 496.
Elm Pollen as Complicating Factor in Hay-Fever. J. H. Black, Dallas, Texas, and O. C. Durham, Indianapolis.—p. 501.
*Vital Capacity in Bronchial Asthma. S. M. Feinberg, Chicago.—p. 506.
Allergic Eczema. R. M. Balyeat, Oklahoma City.—p. 516.
*Disappearance Time of Circulating Ragweed Pollen Material After Absorption from Nose and Throat. M. B. Cohen, E. E. Ecker and J. A. Rudolph, Cleveland.—p. 529.
*Food Allergy and Pollen Hay-Fever. A. H. Rowe, Oakland, Calif. —p. 531.
Nature of Allergy. F. M. Rackemann, Boston.—p. 536.
*Allergy Due to Silk. S. J. Taub, Chicago.—p. 539.

Patch Test in Contact Dermatitis.—The results of various methods of testing ninety-eight patients suffering from "contact dermatitis" are demonstrated by Ramirez and Eller. The patch method of testing was superior to other methods in determining sensitization to contact excitants, and particularly those of nonprotein nature.

Vital Capacity in Bronchial Asthma.—A study of the vital capacity in eighty-eight cases of bronchial asthma under varying conditions was made by Feinberg. There was a diminution in the capacity during the attack proportional to the severity of the latter. The average vital capacity between attacks was considerably decreased in adults but little altered in children. This may be interpreted as a greater tendency to complications in adults. Although the nature of this tendency has not been definitely ascertained, it is thought that emphysema is the most likely possibility. The presence of a chronic cough diminished the vital capacity still further. These and other observations seem to indicate that vital capacity determinations may be employed to great advantage in bronchial asthma to determine the progress and prognosis due to complications. This study also shows that bronchial asthma is frequently capable of producing permanent and organic changes, especially in adults, sufficiently marked to be discernible by vital capacity tests. It is suggested that bronchial asthma with its resultant complications is a disabling ailment more frequently than is ordinarily assumed.

Disappearance of Circulating Ragweed Pollen After Absorption from Nose and Throat.—By means of a modification of the Prausnitz Küstner reaction, an attempt was made by Cohen et al. to measure the disappearance time of circulating ragweed pollen material after absorption from the nose and throat. In eight out of ten nonallergic subjects the allergen could be demonstrated to be present for twenty-four hours. In no case was there any demonstrable at the end of forty-eight hours.

Food Allergy and Pollen Hay-Fever.—Rowe insists that the allergist must study the patient complaining of seasonal hay-fever from the point of view of sensitizations to other than pollen allergens. Such patients often have food sensitizations that are productive of gastro-intestinal symptoms, headaches, urticaria, eczema, asthma, and nasal congestion as well as other symptoms due to food allergy. The control of such food allergies is facilitated by the use of the elimination method of diet trial.

Allergy Due to Silk.—It is suggested by Taub that the problem of sensitization in eczema due to contact with silk and other proteins be given more attention in the examination of the patient. The results of a questionnaire sent out to a number of allergists indicate that this sensitization is more common than ordinarily considered.

Journal of Nutrition, Springfield, Ill.

3: 99-228 (Sept.) 1930

Utilization of Carbohydrate by Totally Depancreatized Dogs Receiving No Insulin. S. Soskin, Toronto.—p. 99.
*Response of Monkey (Macacus Rhesus) to Withdrawal of Vitamin A from Diet. E. B. Tilden and E. G. Miller, Jr., New York.—p. 121.
*Does Nickel Dissolved from Container During Pasteurization Catalyze Destruction of Vitamins of Milk? A. D. Pratt, Rochester, N. Y.—p. 141.
*Effect of Long Continued Parathyroid Administration on Body Calcium and Phosphorus of Albino Rats. P. L. Day, Little Rock, Ark.—p. 157.
Multiple-Chamber Respiration Apparatus for Rats and Other Small Animals. F. G. Benedict, Boston.—p. 161.
Metabolism of Albino Rat During Prolonged Fasting at Two Different Environmental Temperatures. K. Horst, L. B. Mendel and F. G. Benedict, Boston.—p. 177.
Carbohydrate Metabolism Following Guanidine Deglycogenation. F. Bischoff and M. L. Long, Santa Barbara, Calif.—p. 201.

Response of Monkey to Withdrawal of Vitamin A from Diet.—Observations are reported by Tilden and Miller on eleven monkeys kept until death on a ration containing only 6 to 12 units of vitamin A daily, and on six monkeys maintained on a similar ration, except that it contained from 250 to 700 units of the vitamin per diem. The rations were exactly similar, except that in the case of the deficient ration the butter fat used had been aerated for eight hours at 120 C. and contained too little vitamin A to be detected by quantitative tests in rats. The first symptom of illness noted in the monkeys receiving the low vitamin A ration was loss of weight, which was followed sooner or later by loss of appetite and finally by colitis and death. In one animal, extensive edema was present shortly before death. There was no xerophthalmia, sinusitis or mastoiditis, and tongue abscesses were not found in any of the animals. Histologic study of the tissues of the monkeys showed keratinization of epithelial tissue in one or more sites in nine of the eleven animals. In a few instances the cornification was extreme, but in no instance were the conjunctivae involved in the keratinizing process. Six monkeys on the control ration, with one exception, remained well and gained weight. One animal developed a nonfatal dysentery, from which it appeared to have recovered when killed. The intestine showed no gross changes at necropsy, but microscopic examination revealed parasites in the intestinal wall. These parasites were not detected in the intestines of the animals on the deficient ration which succumbed to colitis.

Nickel Dissolved from Container During Pasteurization.—Pratt's study does not indicate that nickel dissolved from the container during pasteurization catalyzes the destruction of vitamins A, B or C during the pasteurization process.

Effect of Long Continued Parathyroid Administration.—Day asserts that the long continued administration of parathyroid extract to normal growing albino rats receiving a normal diet had no measurable effect on the percentages of body calcium and phosphorus in the animals.

Journal of Preventive Medicine, Baltimore

4: 339-416 (Sept.) 1930

Meningococcus Meningitis in Detroit in 1928-1930: II. Clinical Aspects of Epidemic. J. E. Gordon and J. F. Norton, Detroit.—p. 339.
*Id.: III. Biology of Causative Organisms. J. F. Norton and N. H. Broom, Detroit.—p. 355.
*Seasonal Variations in Intestinal Flora of Normal Individuals. R. Goldwasser and I. J. Kligler, Jerusalem, Palestine.—p. 361.
Factors Influencing Selective Distribution in Diphtheria. J. A. Doull, Baltimore.—p. 371.
*Typhoid Fever Apparently Spread by Boiled Lobster. G. W. Anderson and C. L. Scamman, Boston.—p. 405.
Union of Vaccine Virus and Specific Antiserum in Vitro. N. E. McKinnon, Toronto, Canada.—p. 411.

Meningococcus Meningitis in Detroit in 1928-1930.—During the 1928-1929 meningitis epidemic in Detroit, sixty-two meningococcus strains were isolated by Norton and Broom from patients and thirty-three meningococcus strains from carriers (home contacts of the patients). These ninety-five strains were all agglutinated by a polyvalent antimeningococcus serum in a dilution of 1 : 400.

Seasonal Variations in Intestinal Flora.—A study made by Goldwasser and Kligler of the intestinal flora of a group of normal individuals over a period of twenty months revealed the fact that at certain seasons quantitative as well as qualitative changes occur. During the winter a condition of equilibrium exists, the number of bacteria is relatively high, the moisture content is low, and cocci and anaerobic spore formers predominate. In the spring (about April or May) there is a transformation: the total number of bacteria falls, the coli preponderate and cocci and anaerobic spore formers diminish. The curve of the coli-cocci ratio follows closely that of bacillary dysentery, suggesting some relation to the same primary favorable factor, the change in the intestinal environment favoring the development of this group of bacteria.

Typhoid Apparently Spread by Boiled Lobster.—The outbreak reported on by Anderson and Scamman is noteworthy in that the disease was spread by a food not previously incriminated, that unrelated persons in four different towns were involved, and that the contamination of the food occurred indirectly from the handling of associated material that was contaminated.

Kentucky Medical Journal, Bowling Green

28: 407-470 (Sept.) 1930

Beautiful Bowling Green Prepares for Medicos. J. M. Nelson, Bowling Green.—p. 407.
Safety Factors in Management of Benign Prostatic Obstruction. T. D. Moore, Memphis, Tenn.—p. 451.
Radium and Use in Uterine Diseases. W. E. Gary, Hopkinsville.—p. 454.
Talk. W. A. Bryan, Nashville, Tenn.—p. 457.
Laryngeal Obstruction. W. A. Weldon, Glasgow.—p. 460.
Hydatidiform Mole. C. F. Clayton, Jr., Balkan.—p. 461.
Seasonal Hay-Fever Treated with Complete Relief of Symptoms: Two Cases. J. M. Kinsman, Louisville.—p. 462.
Hypertensive Heart Disease Without Hypertension; Illustrative Cases. E. F. Horine and M. M. Weiss, Louisville.—p. 464.

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Laryngoscope, St. Louis

40: 627-706 (Sept.) 1930

Clinical Anatomy of Ethmoidal Labyrinth. J. P. Schaeffer, Philadelphia.—p. 627.
Nonsurgical Treatment of Ethmoiditis. J. I. Dowling, Albany, N. Y.—p. 633.
Zinc Ionization of Ethmoids. J. McCoy, New York.—p. 640.
Demonstration of Intranasal Surgery on Wet Specimen. S. Yankauer, New York.—p. 642.
External Operation on Ethmoids. E. R. Faulkner, New York.—p. 646.
Masking Effects of Interfering Tone on Deafened Ear. J. Guttman and L. B. Ham, New York.—p. 648.
Acute Otitis in Children. G. M. Van Poole, Honolulu, Hawaii.—p. 655.
Saccharomycosis of Hard Palate: Case. H. A. Laessle, Philadelphia.—p. 660.
Tonsillectomy by Eversion Method. P. S. Stout, Philadelphia.—p. 663.
Observations and Results in Adenoid and Tonsil Surgery. D. H. Jones, New York.—p. 667.

Maine Medical Journal, Portland

21: 153-166 (Sept.) 1930

Present Status of Trained Nurse. R. V. N. Bliss, Bluehill.—p. 157.
Urogenital Tuberculosis. C. N. Peters, Portland.—p. 162.

New England Journal of Medicine, Boston

203: 613-660 (Sept. 25) 1930

Health, Science and Vivisection. J. B. Deaver, Philadelphia.—p. 613.
Efficiency Problems in Applied Surgery. E. L. Hunt, Worcester, Mass.—p. 616.
*Comparing Breast-Fed and Bottle-Fed Infant. M. M. Glazier, Boston.—p. 626.
Epididymotomy for Epididymitis. C. S. Swan, Boston.—p. 631.
Tuberculosis of Hip Joint. D. S. O'Connor, New Haven, Conn.—p. 636.

Comparing Breast-Fed and Bottle-Fed Infants.—Glazier's study, though dealing with a limited number of infants, would suggest that infant mortality and frequency of infection have a definite relationship to poor economic and hygienic conditions. In group studies, "breast" or "bottle" feeding alone is not the determining factor in frequency of infection and infant mortality. The determining factors are hygienic and economic conditions. Infants in a district with poor economic and hygienic conditions have more frequency of infections, deficiency diseases, and a greater infant mortality, irrespective of breast or bottle feeding. In districts where economic and hygienic conditions are fairly good, the average bottle-fed infant does as well as the average breast-fed infant. Clinic infants have a mortality of one-half that of nonclinic infants in the same district.

Philippine Islands M. Assn. Journal, Manila

10: 311-356 (Aug.) 1930

*Typhoid Fever in Pregnancy. A. Villarama and J. S. Galang.—p. 311.
Enlargement of Thymus in Epidemic Parotitis. F. Esquivel.—p. 316.
Blood Examination Among Normal Filipinos. P. L. Cabigting.—p. 319.
Negative Lepers in First Sanitary Division, Cebu. L. B. Gomez.—p. 322.
Chlorine in Purification of Water. A. Pio de Roda.—p. 326.
Nutrition Clinic in Santa Ana Elementary School, Manila. A. Tupas, D. Belmonte and C. Cabrera.—p. 333.

Typhoid in Pregnancy.—Sixty-four patients, consisting of pregnant and puerperal women affected with typhoid, were studied by Villarama and Galang. Typhoid terminated pregnancy in about 78 per cent of their cases. The termination of pregnancy did not in any way cut short the course of the disease. Fetal mortality was 60 per cent of the fetuses born. Maternal mortality was about 26 per cent, more deaths having occurred among patients affected during the puerperium than among those affected during pregnancy. Of the three patients with positive blood culture for *Bacillus typhosus*, two recovered and one died. All the patients who had previously been inoculated with antityphoid vaccine recovered.

Physical Therapeutics, New York

48: 433-480 (Sept.) 1930

Mechanical Vibration: Status in Medicine. M. L. H. Arnold Snow, New York.—p. 433.
Physical Therapy in Institutional Practice. E. F. Otis, Melrose, Mass.—p. 442.
Cases Treated by Physical Therapy. E. C. Shattuck, New Bedford, Mass.—p. 447.
Diagnosis and Treatment of Chronic Arthritis. J. W. Tarbett, Marlin, Texas.—p. 456.
Quartz Mercury Lamps: Comparison Between Water Cooling and Air Cooling. A. L. M. Dingee, Cambridge, Mass.—p. 461.

Southwestern Medicine, Phoenix, Ariz.

14: 405-456 (Sept.) 1930

Theories of Direct and Indirect Causes of Cancer and Principles of Treatment. O. H. Brown, Phoenix.—p. 408.
Cancer in Abdomen Exclusive of Pelvis. H. B. Cudgel, Phoenix.—p. 418.
Uterine Cancer. G. E. Goodrich, Phoenix.—p. 420.
Cancer of Breast. E. P. Palmer, Phoenix.—p. 422.
Malignancies in Accessible Locations. J. M. Greer, Phoenix.—p. 427.
Paget's Disease of Nipple. W. W. Waite, El Paso, Texas.—p. 429.
Nontropical Sprue. R. W. Mendelson and M. P. Bean, Albuquerque, N. M.—p. 430.

Texas State Journal of Medicine, Fort Worth

26: 333-398 (Sept.) 1930

Sacral Anesthesia in Hemorrhoidectomy. W. E. Schulkey, San Angelo.—p. 342.
Fistula in Ano, Emphasizing Two-Stage Operation. H. T. Hayes, Houston.—p. 344.
Diagnosis and Treatment of Cancer of Stomach. P. Riddle, Dallas.—p. 348.
Carcinoma of Cervix Uteri. C. O. Bailey, Dallas.—p. 351.
Intussusception. R. J. White, Fort Worth.—p. 354.
Spinal Anesthesia as Therapeutic Measure for Intestinal Obstruction. J. W. Neely, Terrell.—p. 357.
Snapping Hip. E. B. Parsons, Palestine.—p. 361.
Treatment of Urethral Strictures with Nonvacuum Electrode. J. A. Flautt, Galveston.—p. 363.
Nondiphtheritic Infectious Laryngitis. G. M. Cultra and A. J. Streit, Amarillo.—p. 364.
Do Tonsillectomy and Adenoidectomy Increase Immunity to Diphtheria? R. H. Needham, Fort Worth.—p. 369.
Problem of Tuberculosis in Infancy and Childhood. A. P. Bloxsom, Houston.—p. 371.
Effect of Infections on Peristalsis and Appetite; Outline of Appetite Management. J. G. Young, Dallas.—p. 374.
Modern Aspects of Amebic Infections. T. Miller, Dallas.—p. 377.
Present Need for Better Teaching of Obstetrics. W. R. Cooke, Galveston.—p. 379.

Virginia Medical Monthly, Richmond

57: 425-494 (Oct.) 1930

Medical Causes of Abdominal Pain. F. C. Rinker, Norfolk.—p. 425.
Intra-Abdominal Pathology Producing Pain. J. L. Rawls, Norfolk.—p. 426.
Abdominal Pain Originating in Urinary Tract. B. F. Harrell, Norfolk.—p. 430.
Abdominal Pain and Relation to Neurologic Diseases. F. H. Redwood, Norfolk.—p. 432.
Diagnosis and Treatment of Duodenal Ulcers. S. McGuire, Richmond.—p. 433.
Avertin Anesthesia. H. G. Preston, Harrisonburg.—p. 437.
New Radical Mastoid Operation. J. M. Smith, New York.—p. 440.
Pathologic Laughing and Crying. W. Freeman, Washington, D. C.—p. 442.
Acute Gangrenous Appendix and Strangulated Hernia in Five Weeks' Old Baby. H. J. Langston, Danville.—p. 446.
Ten Years of Progress in Tuberculosis. W. B. Blanton, Richmond.—p. 447.
Second But Different Type of Carcinoma Developing in Same Uterus. W. B. Huff, Roanoke.—p. 451.
Treatment of Some Surgical Infections. J. A. Gannon, Washington, D. C.—p. 455.
Lobar Pneumonia: Diagnosis Complications and Sequelae. E. G. Scott, Lynchburg.—p. 458.
Medical Treatment of Pneumonia. T. N. Davis, Lynchburg.—p. 461.
Extra-Uterine Pregnancy: Ten Cases. W. R. Payne, Newport News.—p. 464.
*Confirmatory Sign of Free Fluid in Pleural Space. M. Lasersohn, New York.—p. 469.
Cancer of Breast. B. F. Eckles, Galax.—p. 471.
Erythremia (Polycythemia Vera): Case with Autopsy. W. C. Holt, Angleton, Texas.—p. 472.
Incidence of Vincent's Angina in Study of Fifty Unselected Cases. B. N. Pittenger, Roanoke.—p. 474.

Confirmatory Sign of Free Fluid in Pleural Space.—Lasersohn says that dulness and decrease in the intensity of the breath sounds along the lateral chest wall and high in the axilla of the affected side is a confirmatory sign of free fluid in the pleural sac. Dulness with an increase in the intensity of the breath sounds in the axilla on the side that otherwise shows the classic signs of free fluid does not confirm this diagnosis, and is usually indicative of consolidation rather than of fluid. The sign is of value in the differential diagnosis of free fluid and the conditions with which it may be confused. The amount of fluid present is roughly proportional to the extent and degree of dulness and of decrease in the intensity of the breath sounds in the axilla. The high level in the axilla of free fluid due to capillarity and the compressibility of the lung periphery forms the basis for the signs of fluid in the axilla.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British J. Children's Diseases, London

27: 161-244 (July-Sept.) 1930

*Etiology of Juvenile Rheumatism. N. G. Hill.—p. 161.
*Therapeutic Value of Streptococcus Antitoxic Serum in Scarlet Fever. T. Toyoda, J. Moriwaki, Y. Futagi and S. Hoshizaki.—p. 181.
Metastatic Calcification: Twins Born Shortly After Attack of Smallpox in Mother. J. P. Marsden.—p. 193.
Primary Hypertension in Child: Case. R. Hutchison and A. Moncrieff. —p. 201.
Cancrum Oris with Recovery and Subsequent Repair of Defect by Plastic Operation: Case. E. W. Goodall.—p. 204.
Two Cases of Connective Tissue Nevus. J. H. T. Davies.—p. 208.

Etiology of Juvenile Rheumatism.—Hill believes that acute rheumatism can be prevented, or at least its incidence considerably reduced, by children living a healthy life on a simple mixed diet, rich in milk, fruit and animal fats, and being exposed, lightly clad, to sunlight and the open air.

Value of Streptococcus Antitoxic Serum in Scarlet Fever.—The treatment of scarlet fever by means of scarlatinal streptococcus antitoxic serum proved so effective in the experience of Toyoda et al. as to reduce the death rate by half. The serum was found to have a particularly remarkable effect on the symptoms that are due to streptococcus toxin; viz., rash, fever, itching, vomiting, convulsions and palpitation of the heart. While the serum seemed to have some effect in reducing the incidence of complications, it did not appear to have any effect on complications that had already developed.

British Medical Journal, London

2: 457-504 (Sept. 20) 1930

Control of Trachoma. N. B. Harman.—p. 457.
Immunologic Problems in Septicemia. F. T. Cadham.—p. 460.
*Place of Pasteurization in Scheme of Milk Distribution. A. S. M. MacGregor.—p. 463.
Early Diagnosis of Infective Lateral Sinus Thrombosis. F. Muecke.—p. 465.
Fractures of Articular Surfaces of Knee Joint. R. Ollerenshaw.—p. 466.
*Radium in Gynecology. S. Forsdike.—p. 468.
Nodular Splenic Tuberculosis with Gross Enlargement. R. H. Hodges. —p. 471.
Removal of Safety Pin from Duodenum. J. E. Schofield.—p. 471.
*Passage of Gallstones Through Abdominal Wall. A. A. Davis.—p. 471.

Place of Pasteurization in Scheme of Milk Distribution.—The systematic pasteurization of ordinary market milk intended for consumption in large urban areas is, in MacGregor's opinion, unavoidable under present conditions where milk is collected and mixed from widely scattered and varied sources, not under such scrupulous control as to eliminate the risk of chance infections—a danger that experience shows to be real. Efficient pasteurization is of real protective value against bovine tuberculosis, and this practice could not be dispensed with until tuberculosis in dairy herds has been reduced to a minimum.

Radium in Gynecology.—The total number of patients treated by radium by Forsdike was 181. In the inoperable cases the results were: palliation and prolongation of life, 134, with none cured; borderline cases, 33, with 4 cured; operable cases, 14, with 4 cured. The rate of cure in all the cases treated by radium was 4.5 per cent, or one patient out of twenty-two; in the borderline cases 12 per cent, or one patient out of eight; and in the operable cases the rate was 28 per cent, or two patients out of seven. If the advanced cases, in which no cures could be expected, are omitted there were forty-seven operable and borderline cases, of which eight were cured (17 per cent), or one patient out of six.

Passage of Gallstones Through Abdominal Wall.—Davis reports the case of a woman, aged 60, who gave a six months' history of gradually increasing jaundice and loss of weight, with clay-colored stools, dark urine, anorexia and occasional vomiting, preceded by repeated attacks of typical gallstone colic, and extending over a period of twenty-four years. She stated that during this time she had passed through her abdominal wall at intervals thirty-four stones of varying dimensions but usually of the size of small pebbles. They appeared singly or in groups of two or three. Their passage was preceded by the formation of a small swelling under the skin, which, when fomented, discharged the stones externally, leaving the sinus exuding a thick yellow fluid. Abdominal examination revealed the scars of three sinuses, one in the epigastrium and two in the right hypochondrium. A large mass present in the latter region was subsequently diagnosed at operation as an inoperable carcinoma of the gallbladder, this finding being later verified histologically.

Lancet, London

2: 617-672 (Sept. 20) 1930

*Thermal Adjustment of Man and Animals to External Conditions. C. J. Martin.—p. 617.
Congenital Arteriovenous Fistulae. D. De Witt Lewis.—p. 621.
*Cog Wheel Breathing. G. T. Hebert.—p. 628.
Radium Treatment of Cancer of Tongue. S. Cade.—p. 630.
*Raynaud's Disease with Paroxysmal Hemoglobinuria. H. G. Bywater. —p. 632.
Retroperitoneal Fibroma Arising from Anterior Common Ligament. W. H. Ogilvie.—p. 632.
Ineffective Swabbing in Diphtheria Epidemics. G. Bousfield.—p. 633.
Artificial Pneumothorax Apparatus. G. Marshall.—p. 633.

Thermal Adjustment of Man and Animals to External Conditions.—While agreeing with Cramer and Cannon that variation in cell combustion, due to varying activity of the suprarenals and thyroid, plays a part in thermal adjustment, and believing that an adaptation of the activity of the thyroid gland is the cause of persisting increase or decrease of resting metabolism after exposure to cold or warmth, Martin thinks they incline to exaggerate the part ordinarily played by this humoral method in thermal adjustment. The experiments of Hildebrandt (1921) on rats, Grafe and Redwitz (1922) on dogs, and Isenschmid (1922) on cats show that an animal some time after thyroidectomy can regulate its temperature by varying production of heat similarly to a normal one, even when the dorsal cord is severed. True, it starts from a lower base line, but failure to compensate is not manifested until the rate of heat loss is considerable. As Isenschmid points out, the thyroid is not the only instrument at the disposal of the organism for thermal adjustment; it has a whole orchestra to play on.

Cog Wheel Breathing.—In order to attempt to clarify the position and to assess the value of cog wheel breathing as a physical sign, a study of 1,000 cases was undertaken by Hebert, consisting of 428 adult males, 409 adult females, and 163 children under 16. In 292 of these, pulmonary tuberculosis was diagnosed, while in the large majority of the remaining 708 no lung lesion was apparent. The inquiry emphasized the fact that cog wheel breathing is of two kinds. In one the interruptions are irregular; in the other they are regular or, to be more exact, they are synchronized with the beat of the heart. Breathing of the first type is uncommon and is rarely, if ever, heard as well marked waves or sharp jerks. In none of the 1,000 cases could it be ascribed to a pulmonary or pleural lesion, and, on the few occasions on which it was heard, it was noticeable only when the patient was breathing forcibly. Hebert holds that for testing the quality of breath sounds forcible respiration should not be used, and, if this rule is adhered to, irregularly interrupted breathing is so rarely heard that it ceases to be of any importance for clinical purposes. Breathing of the second type, on the other hand, is by no means uncommon and can at times be a very striking feature. It appears to be merely a physiologic phenomenon, for which "air waves" is the most suitable term. Air waves were found in 30 per cent of adult males, in 53 per cent of adult females, and in 19 per cent of children under 16 in 1,000 cases investigated. Air waves are not caused by tuberculosis of the underlying lung tissue but are a physiologic phenomenon. Their situation and the demonstration of pressure fluctuations, synchronous with cardiac systole, in the pneumothorax cavity of some patients and in the inspiratory and expiratory currents of air of others, suggest that they are caused by an expansion of the lung compensatory to the contraction of the heart. Certain cases of so-called exocardial murmurs and of pleuropericardial friction are probably merely instances of air waves.

Raynaud's Disease with Paroxysmal Hemoglobinuria.—Bywater relates the case of a child, aged 3 years, who was taken ill six months previously after being aroused from sleep suddenly in the middle of the night and frightened by the intrusion of a drunken man into the house. He had previously been in good health, his only illness having been measles in infancy.

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Immediately after the alarming incident the child was noticed to have an attack of pain and coldness of his hands, feet and ears. Several attacks had since occurred, the description of a typical one being as follows: When out in the cold the child would become suddenly doubled up with pain and would cry and have to be taken home at once. The fingers, especially the index finger of one hand, the toes, and sometimes the whole foot and the pinna of both ears would become black and swollen. On arrival home after such an attack the first specimen of urine passed would be dark, but the color of the next specimen would be normal. The child would fall asleep and was frequently quite well on awakening, although nervous and frightened. Such attacks had occurred fortnightly for the past few months and had increased in severity. The case is interesting as illustrating the type of Raynaud's disease occurring in children when the process does not proceed to the stage of gangrene. The syncopal stage is extremely short and is barely noticeable, the asphyxial stage being the one observed. A profound neurotic history in the family, the influence of cold on all occasions, and the comparative rarity of the disease are interesting. It appears to be common in these cases to find a relationship with parental syphilis.

Japan Medical World, Tokyo

10: 43-62 (March 15) 1930

*Biologic Significance of Lung Journey of Ancylostoma Larvae in Normal Host. Yoneji Miyagawa and Ryoichi Okada.—p. 43.
Third Proposal to Use a Phosphoric Acid Ester-Calcium in Treatment of Pulmonary Tuberculosis. Seigo Funaoka.—p. 55.

Significance of Journey of Ancylostoma Larvae in Host.—Miyagawa and Okada have made a careful experimental study of this subject on dogs and rabbits. They found that the rate of oral infection of *Ancylostoma caninum* greatly varies according to the age of the dog. The younger the dog, the greater the rate of infection. The older the dog, the lower the rate of infection. Oral infection rate of the young worms remarkably increases when they pass through the lung of the proper host. If the larvae that gathered together in the lung of the improper host were given orally to the improper host, the greater part of them gather again in the lung of the latter. When the larvae obtained from the lung were given to the proper host, the rate of infection decreased. Young worms that passed through the lung of the proper host, even if they were given to the improper host, nearly lost their ability to come to the lung. They stay in the digestive canal and make development to a fair degree. Ancylostoma larvae, if they pass through the lung of the proper host, obtain ability not only to become adult worms in the intestine of the proper host but also to make development to some extent even in the intestine of the improper host. Summing up these facts, they think that in the case of the infection of *Ancylostoma caninum* no matter whether through the mouth or through the skin, the larvae once pass through the lung of the host and make special biologic metamorphosis and afterward they can complete their development in the intestine. In other words, they believe that the lung journey of the larvae is a preparatory action indispensable for the completion of their future development.

Archives Franco-Belges de Chirurgie, Brussels

32: 269-360 (April) 1930

Surgical Treatment of Gastric Ptosis by Suspension: Technic and Results. O. Lambret and G. Bizard.—p. 269.
*Pathogenesis of Gastroduodenal Ulcers. A. G. Weiss and C. Hubster. —p. 282.
Treatment of Duodenal Ulcers by Gastrojejunostomy Combined with Duodenal Exclusion. E. Vandeput.—p. 309.
*Electric Bistoury in Gastric Surgery. A. Guillemin.—p. 338.
Pharyngo-Esophageal Diverticula. A. Jentzer.—p. 343.

Pathogenesis of Gastroduodenal Ulcers.—Weiss and Hubster conducted a series of experiments on dogs in an attempt to ascertain the pathogenesis of gastric and duodenal ulcers. They were convinced that the duodenal reflux was in some way involved; the obvious hypothesis was that the reflux of alkaline secretions toward the pylorus and stomach tended to modify the acidity of the gastric juice and that when this alkaline reflux was in any way arrested the resulting hyperacidity of the gastric secretions irritated the mucous membranes and caused ulcers. With this in mind, the authors by a simple surgical process caused a complete deviation of the duodenal secretions in a number of dogs. Within two weeks all the dogs developed definite syndromes of chronic gastric ulcers. However, to the surprise of the investigators, the acidity of the gastric secretions was in no degree intensified. The authors believe now that the relation between duodenal deviation and gastric ulcers lies not in the degree of acidity of the secretions but in the fact that the alkaline duodenal secretions form a protective covering for the gastric and duodenal mucosas that counteracts the irritating effect of the gastric secretions. As a complement to the results obtained by duodenal deviation, deviation of bile was also effected in several dogs. This caused an intense inflammatory reaction in the duodenum and the antrum of the stomach, though not in the fundus, which resulted in acute ulcerous conditions. No large or chronic ulcer appeared, however. It seemed advisable to follow these two experiments with deviation of the pancreatic secretions; however, no satisfactory method was found at the time. Ulcers are found in human beings in the majority of cases in the duodenum, pylorus and antrum of the stomach, which are zones of alkaline or basic secretion, rather than in the fundus, which is a zone of acid secretion. This seems due to the fact that the organs of acid secretion have a stronger native defense mechanism with which to combat irritation of the mucosa. Therefore when the protective influence of the bile and pancreatic juices is removed, ulcers develop more readily in the zones of alkaline or basic secretion, since the duodenal secretions alone do not afford sufficient protection. The authors do not wish to present any dogmatic conclusions as to the cause of the conditions of reflux which seem to constitute the pathogenesis of gastric and duodenal ulcers, nor do they wish to advocate too strongly any particular treatment. They merely present the results of their research, which seem to them logical.

Electric Bistoury in Gastric Surgery.—Guillemin advocates strongly the use of the electric bistoury in gastrectomy because of its excellent aseptic and hemostatic qualities, which eliminate the former risks of infection and cause immediate coagulation of the blood vessels along the surface of the incision. A secondary value of this immediate hemostasis is the fact that the zone of operation is kept clean and it is easy to proceed from one step to the next.

Revue Française d'Endocrinologie, Paris

8: 193-316 (June) 1930

Hypophyseal Hemocrinia. J. Watrin.—p. 193.
*New Pancreatic Hormone, Vagotonin. D. Santenoise, H. Verdier and M. Vidacovitch.—p. 204.
*Hypercrinic Forms of Obesity. C. Faelli.—p. 261.

New Pancreatic Hormone.—It has long been established that the pancreas produces and secretes a hormone that regulates and stimulates the functional activity of the vagal centers. Santenoise et al., by means of numerous and carefully performed experiments, have proved that the vagotonic power of pancreatic extracts does not belong to insulin, since the effects of insulin on the parasympathetic system are not at all constant and in many cases are negative. Moreover, they have succeeded in extracting from the pancreas a new vagotonic hormone, separated from insulin by a series of precipitations with neutral salts and alcohol.

Hypercrinic Forms of Obesity.—In addition to the forms of obesity caused by hypothyroidism, hypopituitarism and hypoovaria, Pende distinguishes three forms due to hypercrinism of the suprarenal cortex, the pancreas (i. e., hyperinsulinism) and the thymus. Faelli gives the clinical history of a typical case of hyperthymic obesity in a boy of 10 years, weight 53.5 Kg., height 142 cm. The fact that the child is physically robust and his body well proportioned, as well as the absence of myxedema, distinguishes this from a case of hypothyroidism. Moreover, the boy began to walk and talk and his teeth appeared at the normal age, which is contraindicative of thyroid deficiency. The lack of segmental distribution of fat and the absence of evident signs of hypopituitary modifications in physical and roentgen examinations eliminate the possibility of a diagnosis of hypopituitarism. Hypo-ovaria is also eliminated by the lack of eunuchoid characteristics of the skeleton. The genitalia resemble in size those of a child of 5 or 6 years, but this is due to prepubescent hyperthymism. The case is also distinguished from the other two hypercrinic forms of obesity. The hypercorticosuprarenal form presents certain characteristic

precocious sexual developments, hypertrichosis, and intense psychic excitation, which are entirely lacking here. And in hyperinsulinism there is a lowered glycemia while fasting, while in this case the patient showed a rather high degree of glycemia during a period of fasting. In conclusion, the author feels that the congenital macrosomia, vagosthenic temperament with exaggerated appetite, low diastolic pressure, vascular hypoplasia, dexiocardia and marked obesity observed in this patient are characteristic signs of a state of hyperthymism.

Revue Neurologique, Paris

2: 193-288 (Aug.) 1930

*A Particular Anatomic and Clinical Form of Optic Neuromyelitis. G. Marinesco, S. Draganesco, O. Sager and D. Grigoresco.—p. 193.
Roentgenograms of Basal Bones of Skull in Children. V. Christiansen. —p. 229.

A Particular Form of Optic Neuromyelitis.—Marinesco et al. describe a case of a peculiar form of optic neuromyelitis that also presents some characteristics of encephalitis periaxialis. Medullary lesions were found which were clearly indicative of optic neuromyelitis. On the other hand, cerebral lesions affecting the white matter and causing myelinic disintegration with relative conservation of the axis cylinders were suggestive of Schilder's encephalitis periaxialis. The authors feel that it is difficult, if not impossible, to decide to which disease such cases belong even after careful anatomic and clinical examination. They consider these cases as links between optic neuromyelitis and Schilder's disease, which they regard as two separate infections, which have nevertheless a certain relationship.

Annali Italiani di Chirurgia, Naples

9: 615-720 (July 31) 1930

*Differential Value of Serologic and Biologic Reactions in Study of Certain Pathogenic Species of Streptothrix. O. Bartoli.—p. 615.
*Surgical Treatment of Experimental Pancreatic Diabetes by Means of Suprarenalectomy. G. Perrotti.—p. 631.
Mesenteric Cysts of Suprarenal Origin. C. Trinchera.—p. 646.
Glycemia and Hyperglycemic Curve in Simple and Complex Calculosis of Liver. G. Stirpe.—p. 665.

Differential Value of Serologic and Biologic Reactions in Study of Certain Pathogenic Species of Streptothrix.—Bartoli describes a case of infection due to *Streptothrix carnea*, observed in a man, aged 27. He isolated the fungus, studied the cultural characters and points out an accentuated macroscopic and microscopic polymorphism. These cultural data and research carried out with deviation of complement, cutireaction and intradermal reaction, in which antigens prepared from the streptothrix in question and from others secured from other institutes were employed, lead the author to think that there is a close relationship between these various types of streptothrix, so that it is difficult and at times impossible to make a subdivision or a frank classification based on cultural and serologic characters.

Treatment of Pancreatic Diabetes by Means of Suprarenalectomy.—Perrotti concludes from his experiments that the removal of a suprarenal in a dog has a marked influence on the course of experimental diabetes due to the complete removal of the pancreas; it lowers notably the glycemic curve and renders less grave the clinical symptoms of diabetes. These effects are, however, temporary, for a compensatory hypertrophy on the part of the remaining suprarenal is established and the experimental diabetes resumes its grave and fatal evolution.

Riforma Medica, Naples

46: 1189-1224 (July 28) 1930

Acute Chorea and Catalepsy. G. Marinesco, A. Kreindler and E. Cohen. —p. 1191.
A Rare Case of Phthisis Associated with Echinococcus. G. Pennetti.—p. 1194.
*Experimental Researches on Glycogenic Functioning of Liver in Traumatic Shock. A. Scarpello.—p. 1198.

Research on Glycogenic Functioning of Liver in Traumatic Shock.—Scarpello's researches induce him to conclude that in traumatic shock the increase in the blood sugar is due chiefly to an alteration of the glycoregulatory functioning of the hepatic cells. It is not easy to give an explanation of this phenomenon. It is probable that various factors act on the liver and increase the glycogenic functioning. By way of a simple hypothesis, it might be assumed that the traumatic shock acts reflexly on the functioning of the liver or in other words, that the shock causes disturbances in the field of the sympathetic nervous system, which in turn act on the hepatic cells and increase the glycogenolytic functioning. On the other hand, it is not impossible that the disturbing movements of the intestine cause an absorption by the portal system of toxic substances, which, as has been shown for various toxins (Delbet, Marmier), may stimulate the hepatic cells to an increased glycogenolysis.

Rivista di Clinica Medica, Florence

31: 605-652 (June 15) 1930

Malignant Lymphogranuloma: Case. F. Schupfer.—p. 605.
*Semeiologic and Clinical Significance of Cutaneous Telangiectasia. P. Canale.—p. 621.
Treatment of Diabetes Insipidus with Solution of Pituitary by Nasal Route. A. Lunedei.—p. 635.

Semeiologic and Clinical Significance of Cutaneous Telangiectasia.—Canale carried out a series of researches on cutaneous telangiectasia, studying its presence, its topographic disposition, its possible relation to lesions, and in the action of the internal organs. On the basis of such relation clearly demonstrable in the reported cases, the genesis of cutaneous telangiectasia, together with another series of phenomena developing in the skin (vascular and trophic manifestations and pain sensations) might find its explanation in viscerocutaneous reflexes, which, starting from the wounded organ, make their impulses felt through the nervous metamere on the corresponding dermatomere.

Archivos Argentinos de Pediatría, Buenos Aires

1: 169-232 (June) 1930. Partial Index

*Ethylhydrocupreine in Pneumococcal Meningitis. B. Moyano Navarro. —p. 198.
*Lavage of Stomach in Treatment of Pyloric Syndrome of Infants. E. Martinez Zuviria and F. Manchaca.—p. 203.

Ethylhydrocupreine in Pneumococcal Meningitis.—Moyano Navarro reports a case of pneumococcal meningitis, proved by bacteriologic examination, with purulent cerebrospinal fluid, in a child, aged 13 years, in whom recovery was obtained after three intraspinal injections, each of 5 cc. of a 2:1,000 ethylhydrocupreine solution. No visual disturbance was caused by the administration of the drug. The pneumococci rapidly disappeared from the cerebrospinal fluid after the first injection and a slow improvement in the clinical picture followed. The treatment was stopped after the second injection, but aggravation of the patient's condition led to the administration of the third injection. After this injection the patient's condition improved until recovery ensued, with restitution to normal of the cerebrospinal fluid from the bacteriologic, cytologic and chemical points of view.

Lavage of Stomach in Treatment of Pyloric Syndrome of Infants.—Martinez Zuviria and Manchaca consider lavage of the stomach a simple and efficient procedure which renders great benefits in intractable vomiting of infants caused by pyloric stenosis. The authors report the case of an infant, aged 2 months, with a grave picture of recurrent vomiting, denutrition and dehydration. A change of diet and subcutaneous injections of mother's milk (with the aim of provoking desensitization) and the administration of several drugs failed. After three lavages of the stomach (in which a large amount of glairy liquid was expelled) complete recovery ensued.

Siglo Médico, Madrid

86: 189-216 (Aug. 23) 1930

*Value of Determination of Urea Content of Saliva. S. Larregla.—p. 189.
Orthoclinostatic Reaction. J. H. Blair Callejas.—p. 190.

Value of Determination of Urea Content of Saliva.—Larregla says that saliva contains urea in variable amounts and in a concentration proportional to that of the blood, both in normal and in pathologic conditions. The author made a comparative study of the concentration of urea in the blood and in the saliva of normal persons and of patients with renal and other disturbances (nephritis, renal sclerosis, tuberculosis of the kidneys, gonococcal and colibacillary pyelitis, myocarditis with and without edema, arteriosclerosis, cirrhosis of the liver, catar-

rhal jaundice, cancer of the stomach, gastritis, bronchitis, acute or chronic rheumatism, gout, lymphangitis and neurasthenia). In normal persons the urea content of the saliva is just a little below that of the blood. In patients whose kidneys eliminate large amounts of urea, the urea content of the saliva is higher than that of the blood. Generally speaking, however, the values of both are so close together that the determination of the concentration of urea in saliva seems to be a simple method worthy of being popularized. The method is especially indicated in cases in which the withdrawal of blood presents difficulties. The method is contraindicated in patients with suppurative lesions of the mouth, because in those cases the amount of urea increases. The amount of saliva necessary for the determination of the urea content is from 5 to 10 cc. The saliva should be subjected to the same treatment that is used with blood when an estimation of the urea content is going to be made; viz., it is necessary to coagulate the albumins, by mixing the saliva with an equal volume of a 10 per cent solution of trichloracetic acid and then filtering it.

Deutsche medizinische Wochenschrift, Berlin

56: 1467-1510 (Aug. 29) 1930

Psychologic Examination of Witnesses. W. Stern.—p. 1467.
*Acute Ascending Spinal Paralysis During Pregnancy. R. Hornung and H. G. Creutzfeldt.—p. 1470.
Cerebrospinal Fluid in Late Syphilis. A. Wittgenstein.—p. 1474.
*Indications for Extirpation of Spleen During Childhood. H. Hirsch-Kauffmann.—p. 1476.
Surgical Diathermy in Diseases of Nose and Throat, Especially in Malignant Tumors of These Organs. W. Hesse.—p. 1479.

Acute Ascending Spinal Paralysis During Pregnancy.—Hornung and Creutzfeldt describe two cases of acute ascending spinal paralysis. The clinical aspects and the microscopic changes indicated that in one case pregnancy toxicosis had caused the disease; in the other instance, however, the disturbance was intercurrent and had the aspects of acute anterior poliomyelitis. The authors think that in cases caused by pregnancy toxicosis interruption of the pregnancy is advisable. The acute anterior poliomyelitis that occurs during pregnancy seems to be of the same severity as that observed in small children. In spite of the fact that such cases are almost hopeless, interruption of the pregnancy is nevertheless advisable in order to improve the ventilation of the lungs.

Indications for Extirpation of Spleen During Childhood.—Hirsch-Kauffmann first discusses the physiology of the spleen. In view of the great significance of the function of the spleen, it seems that its extirpation would always lead to grave disturbances; however, the spleen is only a part of a whole system and following the removal of the spleen the other parts of the system compensate for its loss. The cases in which secondary involvement of the spleen necessitates its extirpation are comparatively rare. In the literature there is reported the case of an adult in whom splenectomy became necessary on account of adhesions with an unusually large retroperitoneal lipoma. Traumatic rupture of the spleen necessitates extirpation in order to avoid fatal hemorrhage. Tumor of the spleen is not always an indication for splenectomy. In such conditions as exudative diathesis, syphilis, malaria, typhoid, sepsis and leukemia, extirpation of the spleen is contraindicated in spite of the presence of the splenic tumor, because splenectomy would weaken the diseased organism. In spite of favorable results in several cases of leukemia, splenectomy is not advisable in such cases on account of the danger of fatal hemorrhage. The engorged spleen in heart disease requires internal treatment. In cases of endocarditis lenta, in which the spleen causes a new bacterial invasion, splenectomy might be advisable not only because it eliminates the source of infection but also on account of the stimulation of the erythropoiesis and of the leukopoiesis. In discussing the various forms of anemia the author points out that in pernicious anemia, which is rare in children, splenectomy brings only temporary improvement, and in pseudoleukemic anemia, which is characteristic for small children, internal therapy brings better results than surgical intervention. In familial splenic anemia (Gaucher's disease) splenectomy has only a symptomatic significance because it effects a temporary improvement of the anemia and of the leukopenia and thrombopenia. In Banti's disease, extirpation of the spleen is particularly effective when it is done during the first two stages of the disease. In purpura haemorrhagica splenectomy has likewise proved effective. In thrombosis of the splenic or portal veins, provided the diagnosis is made early, extirpation of the spleen might save the life of the patient. Especially effective is splenectomy in congenital hemolytic icterus. The author observed favorable results in five cases and he thinks that in these cases splenectomy is the only effective therapy.

Klinische Wochenschrift, Berlin

9: 1569-1608 (Aug. 23) 1930

Are There Relations Between Hermaphrodism and Homosexuality? L. Moszkowicz.—p. 1569.
*Sedimentation Speed of Erythrocytes in Thyrotoxicoses. W. Hufschmid.—p. 1573.
Orthodiagraphic Determination of Size of Heart During Childhood. O. Kirsch.—p. 1574.
Some Little Known Possibilities for Application of Diathermy. D. Laszlo and E. Weisel.—p. 1576.
*Action of Insulin on Gastric Secretion. P. F. Meyer.—p. 1578.
Experiments on Cutaneous Manifestations Caused by Larvae of Ancylostoma Canium. V. Ellenbogen.—p. 1583.
*Action of Caffeine in Hypoglycemic Condition: Resulting from Overdosage of Insulin. L. Popper and S. Jahoda.—p. 1585.
*Symptom of Facial Paralysis. R. Wartenberg.—p. 1587.
High Degree Increase in Thrombocytes. O. B. Bode.—p. 1587.

Sedimentation Speed of Erythrocytes in Thyrotoxicoses.—In patients with thyrotoxicosis, who received roentgen treatment, Hufschmid determined simultaneously with the basal metabolism also the sedimentation speed of the erythrocytes. He found that the sedimentation was normal in 50 per cent of the cases. The increase in the other cases rarely exceeded 4.6 per cent. The observations show that the sedimentation speed cannot be considered an indicator of the efficacy of therapeutic measures. In patients with thyrotoxicosis, who had been cured with irradiations and who before the treatment had had an accelerated sedimentation speed, the sedimentation was not always completely normalized.

Action of Insulin on Gastric Secretion.—Meyer asserts that the opinions of investigators regarding the influence of insulin on the gastric secretion differ widely. Considering that the correct understanding of this problem is not only of theoretical interest but has also therapeutic and diagnostic value, he made careful tests on fifty patients. Most of them were free from gastric disorders, but some had achylia. In the majority of the patients the metabolism was likewise normal; however, eight had diabetes. The author's observations are summed up as follows: In persons free from achylia the acidity of the stomach increases regularly from seventy-five to ninety minutes after the injection and in most instances the quantity of the gastric juice likewise increases. Control tests with protein proved that the increase is due to the insulin itself and not to the protein contained in the insulin. The increased gastric acidity following insulin injection is an early symptom or a partial manifestation of hypoglycemia, because the blood sugar curve corresponds inversely to the gastric secretion; the blood sugar is lowest when the gastric secretion is highest. Diabetic patients do not show a gastric reaction, if they do not develop hypoglycemia. However, if a person with diabetes develops hypoglycemia, then he likewise shows an increase in the gastric secretion, but usually the increase is less pronounced than in persons without metabolic disorders. Among the patients with anacidity insulin may be used to detect those with incomplete achylia. Insulin should not be employed in patients without metabolic disturbances but with hyperacidity, because the insulin will increase the acidity still more. However, insulin is helpful in the forced feeding of persons with subnormal acidity, with lack of appetite or with anacidity.

Caffeine in Hypoglycemic Conditions Resulting from Overdosage of Insulin.—Popper and Jahoda point out that insulin poisoning or the hypoglycemic syndrome can be counteracted by the administration of dextrose. This might indicate that the dextrose increases the blood sugar and thus nullifies the action of the insulin. However, it has been found that the toxic effects of overdosage of insulin may be counteracted by substances such as liquid petrolatum oil and protein that do not influence the blood sugar content. Even such substances as epinephrine, which really have a hyperglycemic action and do counteract insulin poisoning, do not become effective by way of the blood sugar. On account of its detrimental effects on the circulation epinephrine, however, is not advisable in insulin

poisoning. It was discovered that caffeine has the same action on the toxic effects of insulin as epinephrine, without giving rise to undesirable complications. The authors investigated this action of caffeine in self tests and in tests on other physicians and students who were free from metabolic disorders. The results of the tests convinced the authors that the symptoms of insulin poisoning are not entirely dependent on the decrease in the blood sugar. By the administration of caffeine the manifestations of insulin intoxication may be counteracted without any changes in the decreased blood sugar. Therefore the authors assume that insulin contains a component that influences the sympathetic centers and thus causes the hypoglycemic syndrome.

Symptom of Facial Paralysis.—Wartenberg directs attention to the fact that, if a normal person closes the eyes and if an attempt is then made to lift the upper lid with the finger, one perceives a vibration in the orbicularis oculi. In facial paralysis this vibration is absent. On the basis of two years' experience with this symptom the author comes to the conclusion that it is a valuable aid in the diagnosis of peripheral facial paralysis and should be further investigated.

9: 1657-1704 (Sept. 6) 1930

Clinical Significance of Porphyrine. H. Kämmerer.—p. 1658.
Pathogenesis of Brucella Abortus Infection in Man. C. Hegler.—p. 1663.
Experimental Investigations on Mixed Infections. J. Bürgers.—p. 1666.
*Freezing of Sciatic Nerve for Treatment of Juvenile Gangrene. A. Läwen.—p. 1667.
Significance of Acid Reaction of Skin: Milk Preparation for Acid Treatment in Skin Diseases. W. Scholtz.—p. 1670.
Therapy of Placenta Praevia. J. Wieloch.—p. 1672.
Graphic Representation of Peristaltic Movements of Intestine. M. Biebl. —p. 1674.
*Acid Diet for Treatment of Bronchial Asthma. K. Tiefensee.—p. 1675.
Causal Relations Between Diseases of Abdominal Organs and Renal Diseases. S. Frey.—p. 1678.
Adams-Stokes Disease: Case. G. A. Fischer.—p. 1681.
Surgical Methods for Special Physiologic Investigations. M. Biebl.—p. 1682.

Freezing of Sciatic Nerve for Treatment of Juvenile Gangrene.—Freezing of the sciatic nerve by means of a carbon dioxide apparatus was done by Läwen in three cases of juvenile gangrene. He points out that freezing of a mixed nerve has a therapeutic effect not only because of the interruption of the sensory nerve tract but also because of its influence on the vasoconstrictors. The increased temperature on the sole of the foot indicates a better blood perfusion of the peripheral vessels. If freezing is done for a sufficient length of time, the severe pains disappear immediately; in some instances there develop paresthesias of varying severity. The freezing of the sciatic nerve also shows whether the gangrene is of a benign or a malignant form. In the benign forms the gangrene does not progress after the freezing of the sciatic nerve. Another advantage of the freezing is that within several days the correct site for the amputation can be found. The author gives detailed case reports and discusses the significance of the various aspects.

Acid Diet for Treatment of Bronchial Asthma.—In order to determine whether patients with bronchial asthma incline more to acidity or alkalinity, Tiefensee tested the acidity of the urine. He found that in patients who had not been treated there were periodic changes in the hydrogen ion concentration, in the acid and in the ammonia contents. At the beginning and during the most severe stage of an attack the hydrogen ion concentration was high but the acidity and ammonia levels were low. During the attack-free interval the conditions were reversed. After the author had found that an attack of asthma could be checked when the acidity of the blood had been increased by letting the patient breathe a mixture of air containing from 5 to 8 per cent of carbon dioxide, he attempted to counteract the alkalosis by an acid diet. When the patients were placed on an acid diet with the addition of salts inducing acidity, such as ammonium chloride or ammonium phosphate, the reaction became acid and the asthma attacks became milder or ceased entirely. When patients with asthma were treated by means of the allergen-free chamber, the amount of acid excreted in the urine was likewise increased. But a complete improvement was obtained only when the acid diet was also instituted. In these cases the quantities of acid excreted in the urine were considerably larger than in patients who had not been in the allergen-free chamber. The author comes to the conclusion that even if alkalosis is not the cause of asthma, it is nevertheless a significant symptom and can be counteracted by a diet inducing acidity. He also discusses the possibility whether other means besides the acid diet may effect an acid modification of the blood and tissue reactions.

Medizinische Klinik, Berlin

26: 1281-1316 (Aug. 29) 1930

Urologic Symptoms Indicating Gynecologic Disturbances. W. K. Fränkel. —p. 1281.
Allergic Skin Diseases: Nature, Pathogenesis and Treatment. R. Wurmfeld.—p. 1284.
Relation Between Trauma and Cerebral Tumor. M. Dammer.—p. 1286.
*Treatment of Malignant Diphtheria. K. Kundratitz.—p. 1289.
Incidence of Undulant Fever in Bohemia. E. Singer.—p. 1291.
Skin Lesions in Agranulocytosis. M. Landsberg.—p. 1292.
Demonstration of Natural Defensive Substances (Alexins) in Blood Serum. O. Huntemüller.—p. 1293.
Surgical Indications in Necrosis of Extremities. Hayward.—p. 1297. C'td.

Treatment of Malignant Diphtheria.—Kundratitz reviews several theories regarding the nature of malignant diphtheria. According to some investigators who have detected streptococci in some cases, it is a mixed infection. Streptococci are not found in all instances, however, and the author is inclined to believe that malignant diphtheria is the severest poisoning with diphtheria toxins. He thinks that in this form of diphtheria the toxins are absorbed by the cells to such an extent that the antitoxin neutralization in the tissues is no longer possible. On the basis of experiments by Fröhlich and Zak, the author attempted a combination therapy with diphtheria serum and with theophylline. The latter was employed to increase the tissue permeability. The author made experiments on guinea-pigs and found that among the animals that had been subjected to the combination therapy the mortality was considerably lower than among those that had received only serotherapy. After observing favorable results in the animal experiments, he employed the combination therapy in a children's hospital; and, although not all children with malignant diphtheria could be saved, the mortality rate was nevertheless considerably lower than when only serum was administered. The author describes the technic of the treatment and points out that the circulation should be watched carefully. On account of the diuresis that may result, it is also essential that the patient receive a sufficient amount of fluids.

Monatsschrift für Kinderheilkunde, Leipzig

47: 385-576 (Aug.) 1930

*Peculiar Bone Disease in a Nursling. G. Roske.—p. 385.
Exudative Diathesis: Eosinophil Curve Following Injection of Serum. A. Strohl.—p. 401.
Extrapyramidal Diseases in Children: Microscopic Changes. F. Lotmar. —p. 417.
Id.: Etiologic Classification. J. Ibrahim.—p. 458.
Infantile Eczema: Rôle of Idiosyncrasy in Etiology. E. Moro.—p. 489.
Infectious Diseases in Children: Course of Nonspecific Inflammations. J. Becker.—p. 495.
Congenital Atonic-Sclerotic Muscular Dystrophy. O. Ullrich.—p. 502.
Effect of Digestion on Amount of Ultrafiltrable Calcium and Phosphate in Milk. O. Budde.—p. 511.
Biologic Significance of Intestinal Bacteria in Breast-Fed Infant. E. Stransky and A. Wasitzky.—p. 517.
Significance of Permeability of Mucosa of Small Intestine for Pathogenesis of Dyspepsia and Intoxications. H. Paffrath.—p. 525.
Modification of Basal Metabolism by Thymus and Spleen Extracts. A. Nitschke.—p. 530.
Effect of Various Kinds and Mixtures of Milk on Formation of Coprosterol in Intestine of Nurslings. G. Bischoff.—p. 534.
Synthesis of Ergosterol in Animal Organism. F. Hepner.—p. 539.

Peculiar Bone Disease in a Nursling.—Roske reports a case of a hitherto undescribed disease of the long bones that he observed in a nursling. The infant's parents were healthy and had one other child. The second child was born at term and weighed 7 pounds (3,175 Gm.). During the first four weeks of life he appeared normal and developed well. At the end of this time, however, the mother noticed two swellings on the right leg and a short time later a similar swelling on the left leg. The infant became restless, cried a great deal, drew the legs high up and apparently had severe pain, particularly when the legs were touched. Shortly before his admission to the hospital the swellings had become more marked but the infant did not have fever, drank well and had normal stools. A physician who was consulted made a diagnosis of a healing fracture. On admission to the hospital the infant was found to be strong

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and well developed with solid, regularly distributed fat pads, good turgor, and ruddy cheeks; the skin and visible mucous membranes were of normal color. The infant weighed 4,500 Gm. and was 53 cm. long; the circumference of the head was 40 cm. and of the thorax 38 cm. He held his legs drawn up on the abdomen and cried when they were handled. Both tibias were thickened in their middle third and were hard and highly sensitive; the thickenings were smooth and spindle-shaped and the overlying skin was normal and not adherent. Similar swellings could be felt also in the distal ends of both radii, but these were much smaller and less painful and involved only a small portion of the shaft. Another swelling was found in the distal end of the right humerus. The physical examination was otherwise negative, as were Wassermann reactions in the blood of both the child and the parents. Examination of the blood of the infant revealed a shifting of the leukocytes to the left. In a roentgen examination of both tibias it was found that about the shafts of both bones at the level of the external swellings there was a thick mantle-shaped shadow of almost the same density as the shadow of the shaft. Since the condition did not seem to conform to any of the known bone diseases, a biopsy was performed on the left tibia. The periosteum was found to be thickened and gelatinous but the underlying bone was of normal appearance, slightly softer than normal and highly vascularized. A delimitation between the shaft of the tibia and the overlying bone noted roentgenologically was impossible. Although macroscopically the condition resembled syphilitic periostitis, microscopic examination of the excised periosteum, pieces of bone, and bone marrow did not disclose the changes characteristic of syphilis. The swellings increased slowly in size and then, although the patient was not given special treatment, they began to decrease in size and after nine months they had disappeared completely. Despite the careful examinations and study of the case it was impossible to make a diagnosis.

Zeitschrift für klinische Medizin, Berlin

113: 553-794 (Aug. 12) 1930

Complement Content of Blood Following Physical Exercise. M. Goldner, H. Herxheimer and R. Kost.—p. 553.
Oxygen Combining Power of Blood in Metabolic and Blood Diseases. H. W. Bansi and G. Groscurth.—p. 560.
Symptomatic Polyglobulism: Properties of Blood. K. Hitzenberger and F. Tuchfeld.—p. 576.
Hemophilia: Pathogenesis. B. Stuber and K. Lang.—p. 599.
Relations Between Creatine and Carbohydrate Metabolisms. E. Kopelowitz.—p. 605.
Gastric Mucus in Relation to Acid Fixation. A. Bonis.—p. 611.
*Pulmonary Tuberculosis: Acidity of Gastric Juice. E. Rave.—p. 621.
Ventricular Fibrillation: Sudden Cardiac Death. G. W. Parade.—p. 641.
Blood Pressure: Methods of Measurement. H. von Recklinghausen.—p. 663.
Fatty Degeneration of Liver: Prevention. G. Rosenfeld.—p. 713.
*Exophthalmic Goiter: Treatment with Animal Blood. A. Zimmer.—p. 724.
*Blood Smears and Differential Counting of Leukocytes. M. Plonskier.—p. 753.
Respiratory Allergic Diseases: Skin Tests. E. Matzger.—p. 759.
Modification of Circulation by Psychic Processes. W. Bier.—p. 762.
Diastase Content of Blood in Communicable Diseases. W. Grunke.—p. 782.

Acidity of Gastric Juice in Pulmonary Tuberculosis.—Rave gives the results of a study of the acidity of the gastric juice in thirty persons with moderately severe or severe pulmonary tuberculosis. He noted that the acidity seemed to be independent of the type and extent of the pulmonary process. It did, however, seem to be dependent on the duration of the disease because persons who had been under observation for a long time were always found to have either subacidity or anacidity.

Treatment with Animal Blood of Exophthalmic Goiter.—In the treatment of 120 patients with exophthalmic goiter, Zimmer used Bier's method of intramuscular injections of sheep, beef and horse blood. In even severe cases of the disease in which the patients had been under internal treatment for a long time and had been sent in for surgical treatment he was able by mean of injections of animal blood to cause a complete disappearance of the symptoms and maintain the patients free from recurrence for several years. This form of treatment, however, does not usually greatly modify the exophthalmos; severe toxic injuries of the heart and conduction disturbances are likewise not influenced. Since the size of the goiter remains unchanged, operation is indicated in all cases in which mechanical obstruction is present. In the few cases in which it was necessary to operate on the patient because of the size of the goiter, it was noted that the patients supported the operation much better than did patients who had not received treatment wih animal blood.

Blood Smears and Differential Counting of Leukocytes: Technic.—On the basis of a comparative study of the two methods of making blood smears and differential counts of leukocytes, Plonskier states that Schilling's method is not only less complicated but just as accurate as Goldmann's method.

Zentralblatt für Gynäkologie, Leipzig

54: 2113-2176 (Aug. 23) 1930

Plastic Surgery of Cervix Uteri, Particularly Sturmdorf's Method. L. Fraenkel.—p. 2114.
Influence of Abnormalities of Shape of Fetal Head on Mechanism of Birth: Occipitosacral Position. W. Bickenbach.—p. 2118.
*Pathologic Anatomy of Female Vertebral Column: Pathogenesis of Gynecologic Backache. H. Übermuth.—p. 2122.
Treatment of Gonorrhea in Women by Means of Mixed Vaccines. B. Tausch.—p. 2129.
*Ventrovesicofixation of Uterus. S. Jülich.—p. 2135.
*Tumor of Omentum. R. Joachimovits.—p. 2139.
*Expulsion of Fibromyoma Following Abortion. W. Borochowitsch.—p. 2144.

Pathologic Anatomy of Female Vertebral Column: Pathogenesis of Gynecologic Backache.—Übermuth investigated the question of whether backaches in women may be due to pathologic changes in the vertebral column. His observations are summed up as follows: In the intervertebral fibrocartilages, especially in those of the lumbar region, there develop areas of degeneration. They usually become manifest at the end of the second and at the beginning of the third decade of life. The sequelae of the degeneration, such as disintegration of the nuclei, formation of cartilaginous nodules and degeneration of the medullary connective tissue, may lead to spondylitis deformans. Changes developing with advancing years lead to a decrease in the elasticity, and this results in an uneven distribution of pressure and traction forces on the vertebral column. Such unequal burdening may cause pains in the periosteum-muscle apparatus. These conditions alone may cause backache, but besides these there are certain factors that influence the female vertebral column; namely, pregnancy, certain occupations, and a protective position that is assumed in some gynecologic diseases.

Ventrovesicofixation of Uterus.—Jülich points out that among the numerous surgical methods that are employed for the correction of the position in retroflexion of the uterus there are few that give entirely satisfactory results. A modification of Olshausen's method that was first employed by Werth, he considers as the most advantageous. He describes the technic as follows: After the abdominal cavity has been opened by means of Pfannenstiel's incision, the uterus is drawn toward the back and upward, so that the plica vesico-uterina is brought out. With the aid of clamps placed along the plica, the peritoneal covering of the plica, by means of a catgut suture, is made into a ruff. This suture also grasps the uterus below the attachment of the round ligament. A catgut suture is then put around the ligaments near where they leave the uterus, and on the anterior wall of the abdomen the suture grasps besides the peritoneum also the sheath of the rectus, the rectus muscles and the fascia. While the abdominal wall sutures are drawn, the vesical ruff suture is made. Then follow the abdominal wall sutures from the inside, and the two last knots are connected by a continuous catgut suture. It was pointed out that the connection of the uterus with the bladder might be a disadvantage during pregnancy in that during enlargement of the uterus the bladder might likewise be forced upward. However, observations on patients who underwent the operation did not justify this fear, for none of them complained of bladder trouble, and examinations likewise did not reveal abnormalities. That bladder disorders do not develop is due to the fact that not the bladder itself but rather its peritoneal covering is connected with the uterus. Another thing that was feared was that the vesical ruff suture might become cicatrized and might hinder the enlargement of the uterus. However, the author did not observe this complication and he thinks that in Werth's method of ventrovesicofixation the danger of formation of a scar tissue

ligament is not more pronounced than in other methods. He gives several case reports and then compares Werth's method with several others. In most of them the results are far less favorable. The Alexander-Adams operation is perhaps the best method when pregnancy and confinement are considered, in that it reestablishes entirely normal anatomic conditions. However, a disadvantage of the method is that the uterus frequently resumes the old retroflexion. The author comes to the conclusion that Werth's method gives the most favorable results.

Tumor of Omentum.—Joachimovits reports the case of a woman, aged 66, who had a tumor of the omentum. He gives the anamnesis and describes the symptoms and the operation. The microscopic examination of the tumor revealed a fibromyoma. The author reports this case not only because tumors of the omentum are comparatively rare but also because of the typical gynecologic anamnesis (twenty years previously supravaginal myoma operation) and on account of the differential diagnosis.

Expulsion of Fibromyoma Following Abortion.—Borochowitsch reports the case of a woman, aged 27. The anamnesis revealed two spontaneous births several years previously, and an artificial abortion in the second month of pregnancy ten months previous to the hospitalization. Her present ailment had begun two months before she came to the hospital. Examination revealed a uterus enlarged as in a gravidity during the fourth month; the cervix uteri was dilated and the os uteri was open. By means of the abortion forceps the ovum was removed. It showed the development of the second month of pregnancy. Curettage and examination of the uterine cavity revealed a tumor on the posterior wall. Six days after the abortion the patient was discharged from the hospital. However, ten days later she complained of severe pains, and examination revealed that the tumor extended into the cervix uteri. On account of the size of the tumor and its location, supravaginal amputation was done in preference to the vaginal operation. The tumor had a circumference of 25 cm. Microscopic examination revealed a fibromyoma. The author thinks that the submucous myoma had caused the abortion and that the contractions of the uterus had caused the expulsion of the tumor.

Acta Rheumatologica, Amsterdam

2: 1-26 (May) 1930

*Suggestions for Investigation of Rheumatic Cases. R. F. Fox.—p. 4.
Joint Diseases in Animals and in Man. J. Wester.—p. 7.
*Rheumatic Conditions in Animals and Men. J. Wester.—p. 10.
Idem. J. Wester.—p. 11.
Metabolic Changes in Rheumatic Diseases. K. Harpuder.—p. 11.
Acute and Chronic Rheumatism in U. S. S. R. G. Danischewski.—p. 16.

Suggestions for Investigation of Rheumatic Cases.—As the data and experience of workers scattered over many countries are now being compared and discussed, Fox feels that it would be convenient if all students of rheumatism could abandon for the present all attempts at definition and describe their cases in clinical groups or types. He suggests that the principle of age groups should be followed. Age profoundly modifies all rheumatic conditions. In such age groups cases are recorded in tabular form, arranged in columns showing family and personal history, factors of causation, mode of onset, organic and functional abnormalities, and so on. In his own experience these age groups have become characteristic clinical types, with a differing etiology. He invites workers in arthritis to divide their cases into: 1. Arthritis of the young, a disease mainly in women. 2. Arthritis in middle age, in both sexes, and with particular incidence in women at the climacteric. 3. Arthritis in the old. Another mode of grouping cases will appeal to those who are in charge of treatment centers—the therapeutic classification. Conditions of ill health that react similarly under treatment are either of a similar nature or in a similar phase of disease. If a hundred patients with arthritis were submitted to the same treatment they could be usefully classified according to the reactions that they manifested.

Rheumatic Conditions in Animals and Men.—Wester discusses the etiology of: (*a*) genuine idiopathic chronic arthritis deformans; (*b*) arthritis deformans juvenilis (Perthes); (*c*) chronic arthritis deformans after acute polyarthritis, and (*d*) acute polyarthritis. He points out that it is more or less a question of chance if the bacilli are found in the synovia in the bacterial articular infection and therefore does not think it justifiable, when no bacteria are present in the synovial fluid, to come to the conclusion that an arthritic process is not bacterial but toxic, which is the tendency in pathologic conditions (focal infection) in man.

Hospitalstidende, Copenhagen

73: 693-720 (June 26) 1930

*Diagnostic Value of Colloid Reactions in Cerebrospinal Fluid. A. V. Neel and P. Dickmeiss.—p. 697.
*Gastric Glioma: Case. S. Harild.—p. 706.
Distribution of Lead in Organism. S. Lomholt.—p. 713.

Diagnostic Value of Colloid Reactions in Cerebrospinal Fluid.—Neel and Dickmeiss state that the colloid reactions give no information in differential diagnosis beyond that afforded by determination of the albumin. They therefore see no reason for introducing these reactions into the routine laboratory examinations of the spinal fluid when, in addition to cell count and Wassermann test, quantitative globulin-total albumin determination is made.

Gastric Glioma.—In this typical case, in a woman, aged 72, with probable diagnosis of ovarian cyst with a long pedicle, laparotomy revealed a tumor the size of a child's head, situated in the lesser curvature and posterior wall of the stomach. Resection of the stomach was necessary for removal of the tumor. The microscopic diagnosis was peripheral glioma ("schwannoma"), presumably benign. Complete recovery followed. Harild says that the possibility of malignant transformation of a glioma is slight but there is danger of profuse bleeding on rupture of the necrotic cysts, and unless operative treatment is otherwise contraindicated, the tumor should be removed; often only a minor intervention is necessary. The outlook for permanent recovery after removal of the tumor is good.

73: 721-748 (July 3) 1930

*Cutaneous Reflex Hyperalgesia of Thighs in Inflammation of Adnexa in Women. O. Jersild.—p. 721.
*Experiments on Rats with Diet Deficient in Carbohydrates and Vitamin B. S. V. Gudjonsson and A. M. With.—p. 733.
Length of Life of Consumptives with Tubercle Bacilli in Sputum. C. J. Jacobson.—p. 738.

Cutaneous Reflex Hyperalgesia of Thighs in Inflammation of Adnexa in Women.—Cutaneous hypersensibility of the thighs was demonstrated by Jersild in about 70 per cent of fifty cases of acute salpingitis or exacerbations of old inflammations in the adnexa. The hyperalgesia has a typical and constant localization on the lateral aspect of the thigh, somewhat forward, between the middle and lower thirds of the femur. The tenderness is not equally marked in the hyperalgesic zone, but there is a maximal point, always about from 12 to 15 cm. above the knee. Two cases are described.

Experiments on Rats with Deficient Diet.—In these experiments on rats fed on vitamin B, Gudjonsson and With found that the animals also without carbohydrates in their diet fared better than those with starch, and sometimes lived up to twenty weeks. Those to whose diet yeast was added were normal. The studies are to be continued.

73: 749-760 (July 10) 1930

*Studies on Jaundice. T. Geill.—p. 749. C'td.
*Iso-Agglutinin Content of Retroplacental Blood. C. Hamburger.—p. 757.

Studies on Jaundice.—Geill's material comprised 43 ambulant patients, 31 of whom had acute epidemic hepatitis. Of the 15 women only 3 had bradycardia, of the 28 men, 21. Hypotension was noted in 10 women and 12 men. The diastolic blood pressure was reduced in some cases with normal systolic pressure, so that the pulse amplitude was increased. The frequent capillary pulse is attributed mainly to a dilatation of the small vessels but also in some cases to the relatively large pulse amplitude.

Iso-Agglutinin Content of Retroplacental Blood.—Hamburger determined the iso-agglutinin content of retroplacental and cubital blood in sixty cases and found a marked reduction in the retroplacental blood of the agglutinin homologous with the blood corpuscles of the fetus. It is suggested that a slight mixture of liquor amnii with the retroplacental blood may explain this phenomenon.

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